



# **STIC Search Report**

**EIC 1700**

**STIC Database Tracking Number: 148908**

**TO: Dawn Garrett**  
**Location: REM 10C79**  
**Art Unit : 1774**  
**April 6, 2005**

**Case Serial Number: 10/729402**

**From: Usha Shrestha**  
**Location: EIC 1700**  
**REMSSEN 4B28**  
**Phone: 571/272-3519**  
**usha.shrestha@uspto.gov**

## **Search Notes**

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: DAWN GARRETT Examiner #: 76107 Date: 3/23/2005  
 Art Unit: 1774 Phone Number: 2-1523 Serial Number: 10/729,402  
 Mail Box and Bldg/Room Location: Reman 10C79 Results Format Preferred (circle) PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.  
 \*\*\*\*\*

Title of Invention: Organic Electroluminescent Devices Pat. & T.M. Office  
 Inventors (please provide full names): JOSEPH DEATON, ZBYSLAW OWCZARCZYK

Earliest Priority Filing Date: 12/5/2003

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search formulas

(1a), (1b), (1c), (1d), (1e), and (1f)

Attached

Thank you

## STAFF USE ONLY

STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: <u>USA</u>	NA Sequence (#) _____	STN <u>\$ 484.20</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>1</u>	Questel/Orbit _____
Date Searcher Picked Up: <u>4/6/05</u>	Bibliographic _____	Dr. Link _____
Date Completed: <u>4/6/05</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>60</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>30</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>120</u>	Other _____	Other (specify) _____

=> fil reg

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L1 STR

FILE 'REGISTRY' ENTERED AT 13:35:03 ON 06 APR 2005  
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L4 SCR 1965  
L5 8 SEA SSS SAM L2 AND L4  
D SCAN  
L6 329 SEA SSS FUL L2 AND L4  
SAV L6 GAR402/A  
L7 STR L2  
L8 STR L2  
DIS  
L9 15 SEA SUB=L6 SSS SAM L7  
L10 239 SEA SUB=L6 SSS FUL L7  
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L15 70 SEA ABB=ON PLU=ON L13 OR L14  
L16 31 SEA ABB=ON PLU=ON L15 AND (?LUMINES? OR LIGHT? OR  
?EMIT? OR LED/IT OR OLED/IB,AB OR FLUORES? OR LUMIN?  
OR PHOSPHORES?)  
D FHITSTR  
D FHITSTR 2-5

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FILE LREGISTRY  
LREGISTRY IS A STATIC LEARNING FILE

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## FILE HCAPLUS

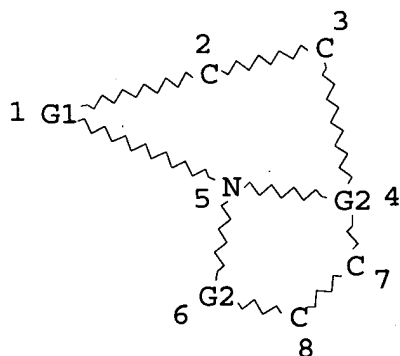
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L2

STR



VAR G1=IR/RH/PT/PD

VAR G2=C/N

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DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

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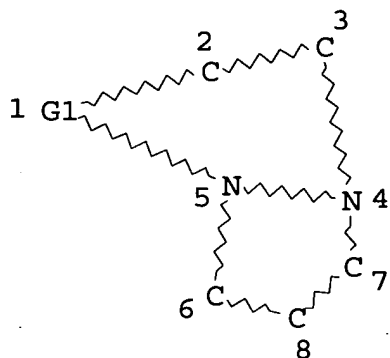
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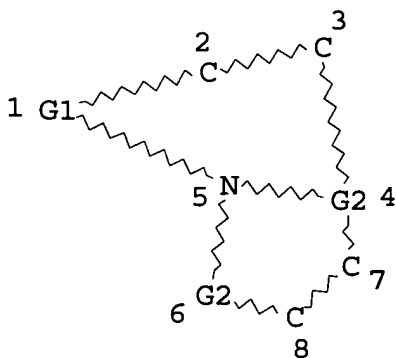
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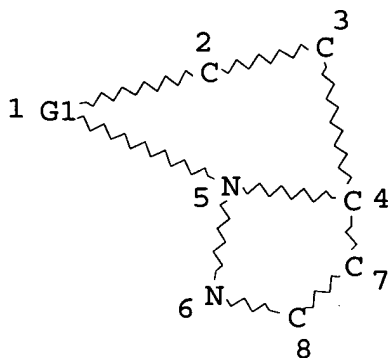
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L8 STR



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FILE 'HCAPLUS' ENTERED AT 15:39:13 ON 06 APR 2005

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=> d 116 1-31 ibib abs hitstr hitind

L16 ANSWER 1 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:123112 HCAPLUS

DOCUMENT NUMBER: 142:228240

TITLE: Iridium compound and organic  
**electroluminescent** device using the  
same

INVENTOR(S): Park, Soo-Jin; Lee, Kwan-Hee; Jung,  
Dong-Hyun;

Shin, Dae-Yup; Kwon, Tae-Hyok; Hong, Jong-In

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 66 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	
DATE	-----	----	-----	-----	
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	US 2005031903	A1	20050210	US 2004-912287	
2004					
0806	JP 2005053912	A2	20050303	JP 2004-227707	
2004					
0804					
PRIORITY APPLN. INFO.:				KR 2003-54778	A
2003					
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0217					

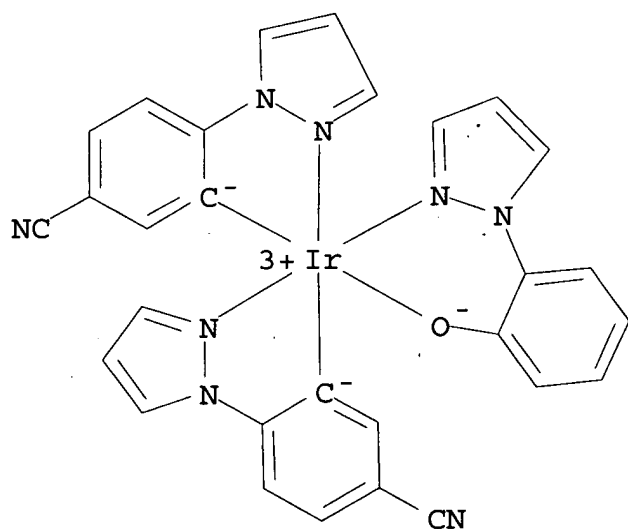
AB Organometallic compds. are described which comprise a metal,  
preferably iridium, with ligands including  $\geq 1$  ligand  
consisting of a(n) (un)substituted Ph ring attached to a(n)

(un)substituted five-membered heterocycle having either two nitrogen atoms or a nitrogen and an oxygen atom as the heteroatoms, with the metal being bonded to the heterocycle at a nitrogen and to the Ph ring at a carbon. Organic **electroluminescent** devices employing the compds., especially devices with **emitting** layers incorporating them, are also described.

IT 843611-43-8 843611-44-9 843611-45-0  
843611-46-1 843611-47-2 843611-48-3  
843611-49-4 843611-51-8 843611-52-9  
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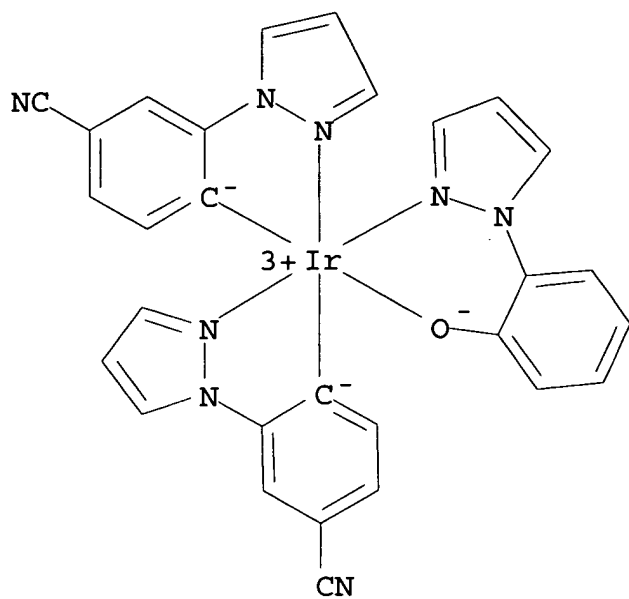
(iridium complexes and other metal complexes with heterocycle-containing ligands and organic **electroluminescent** devices using them)

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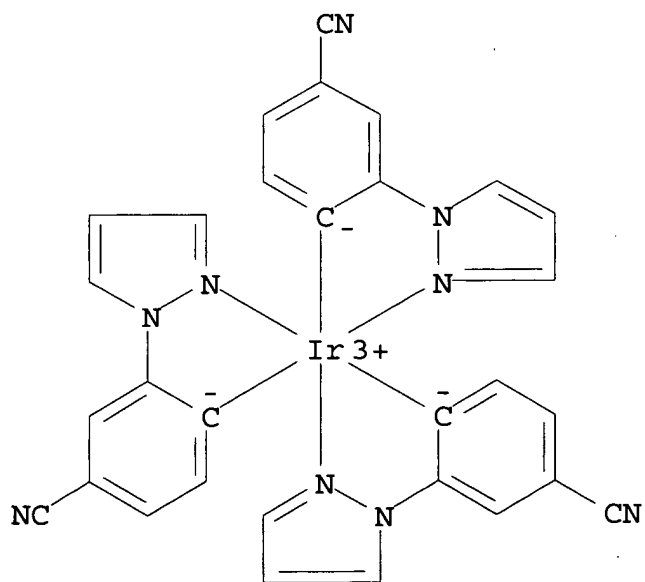


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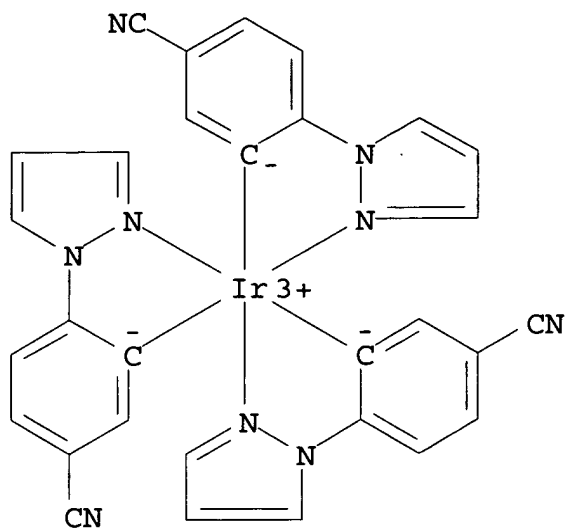




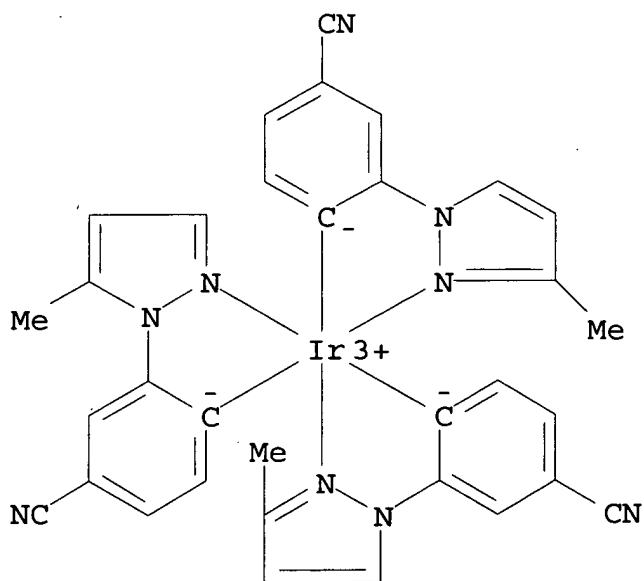
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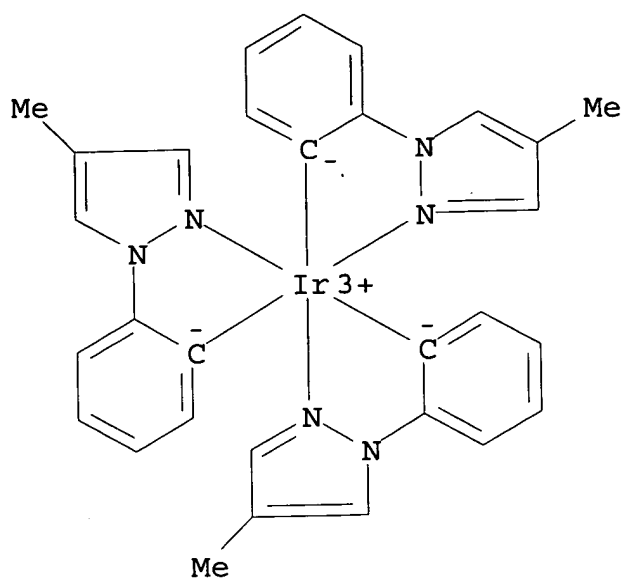
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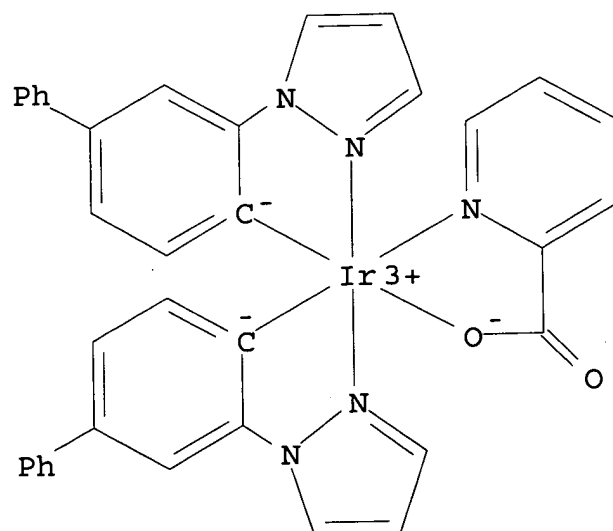
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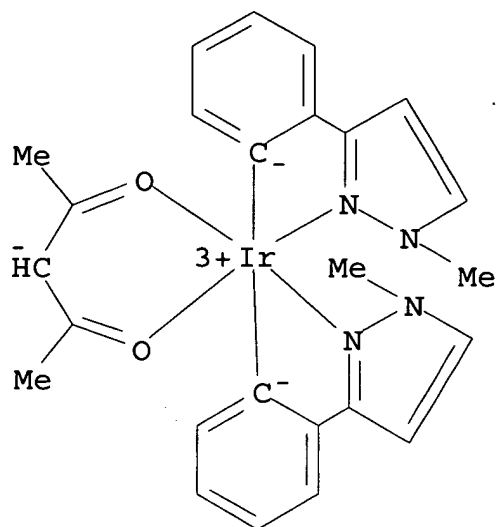
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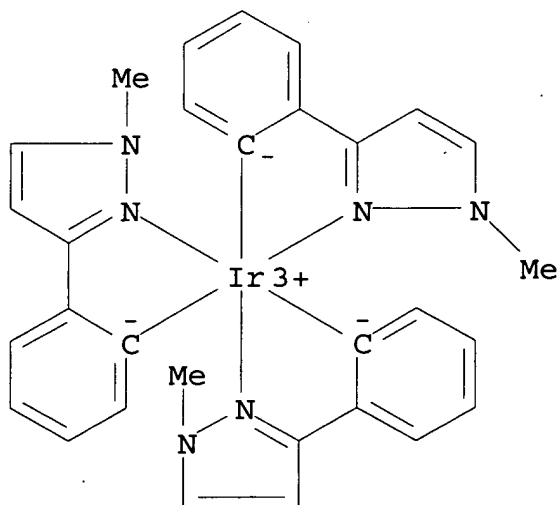
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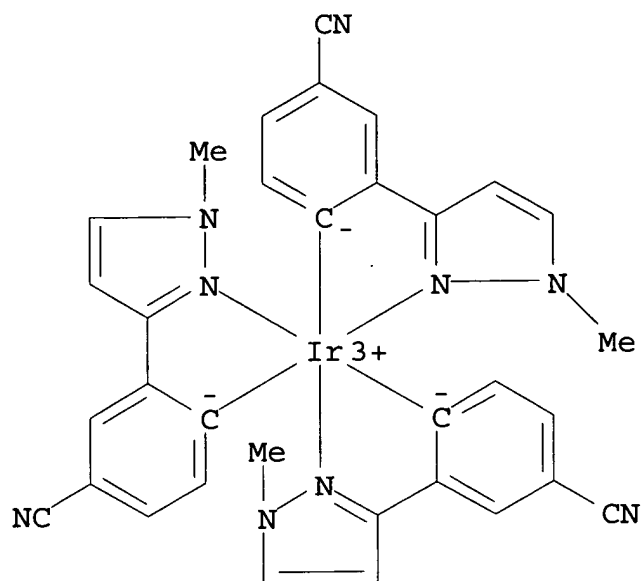
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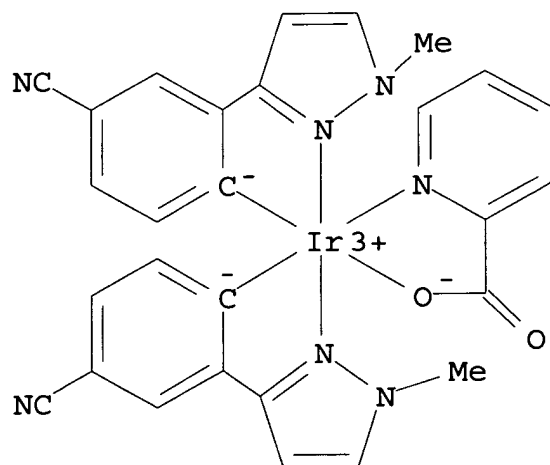
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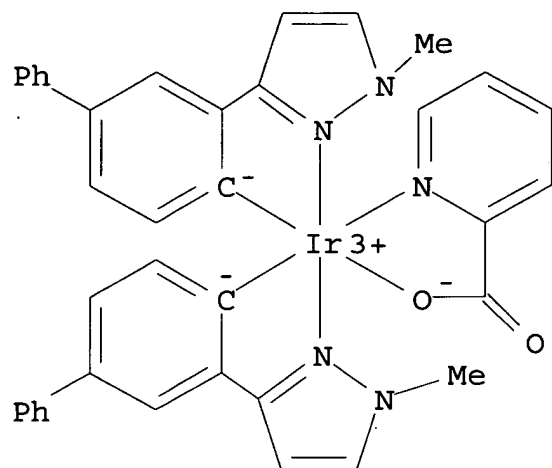
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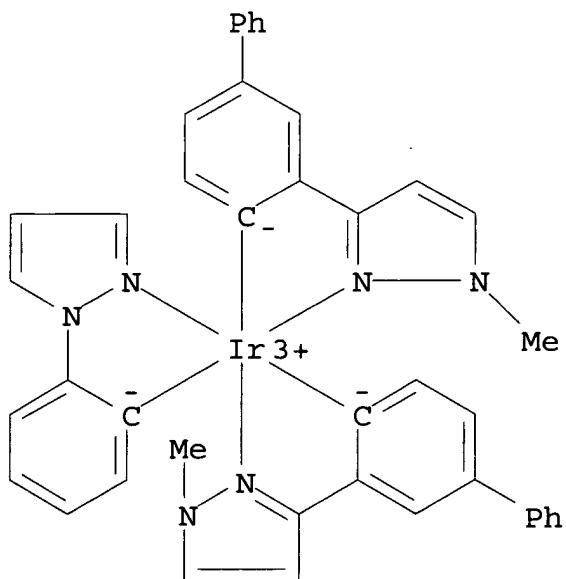
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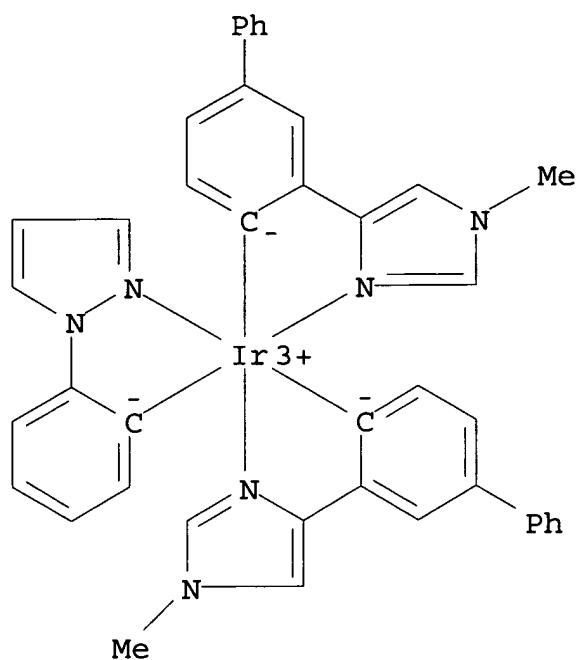
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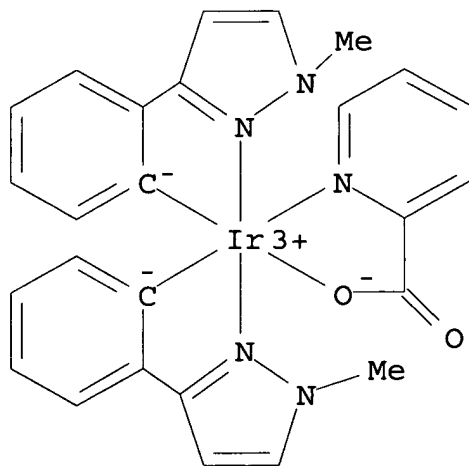
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RN 843611-58-5 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



RN 843611-59-6 HCAPLUS  
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843611-29-0P 843611-30-3P 843611-31-4P

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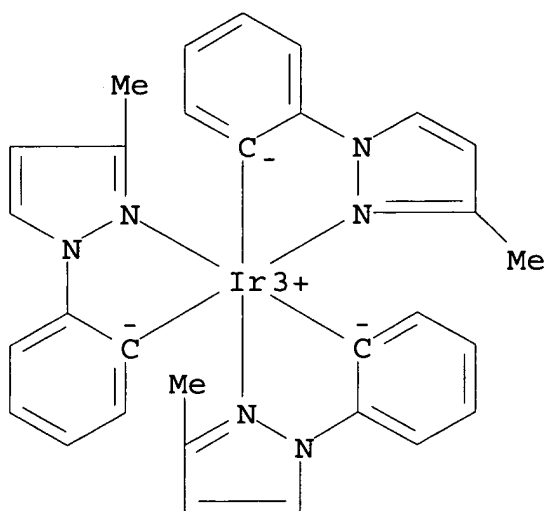
843611-41-6P 843611-42-7P 844478-08-6P

, fac-Tris(3,5-dimethylphenylpyrazolo)iridium

(iridium complexes and other metal complexes with

heterocycle-containing ligands and organic **electroluminescent**  
devices using them)

RN 669067-97-4 HCAPLUS

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RN 843611-07-4 HCAPLUS

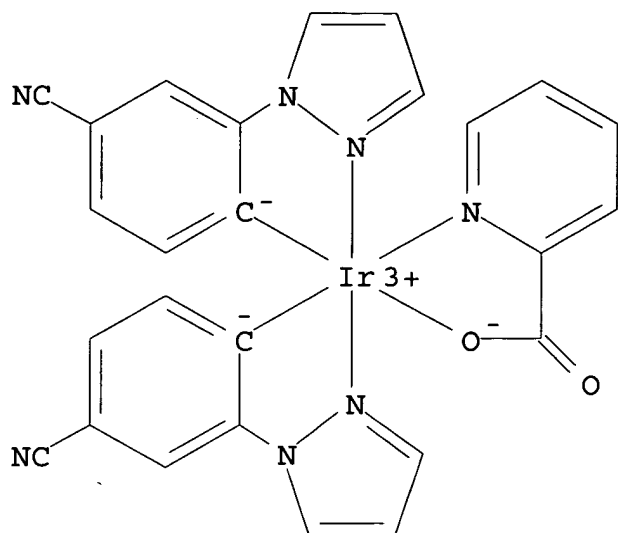
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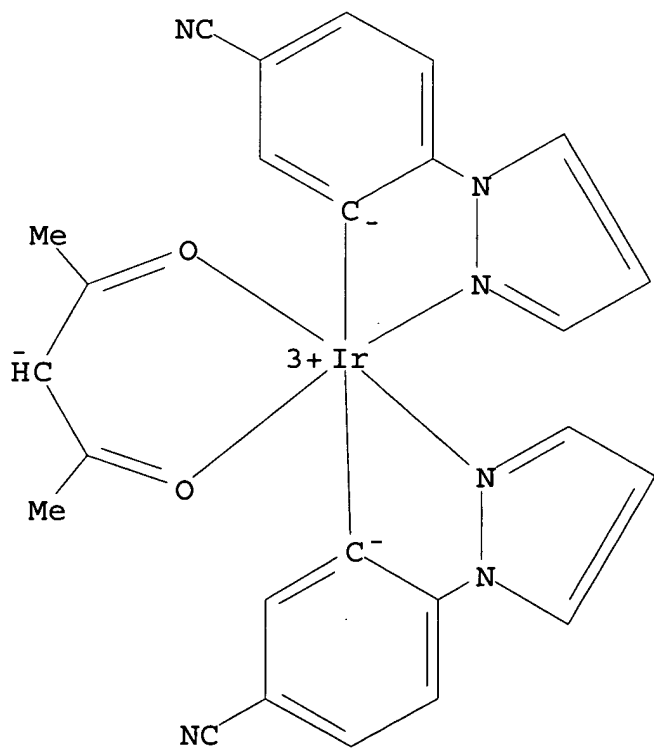
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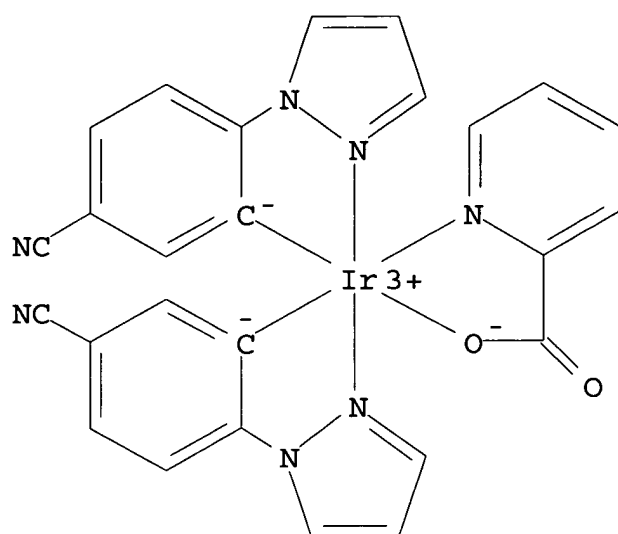




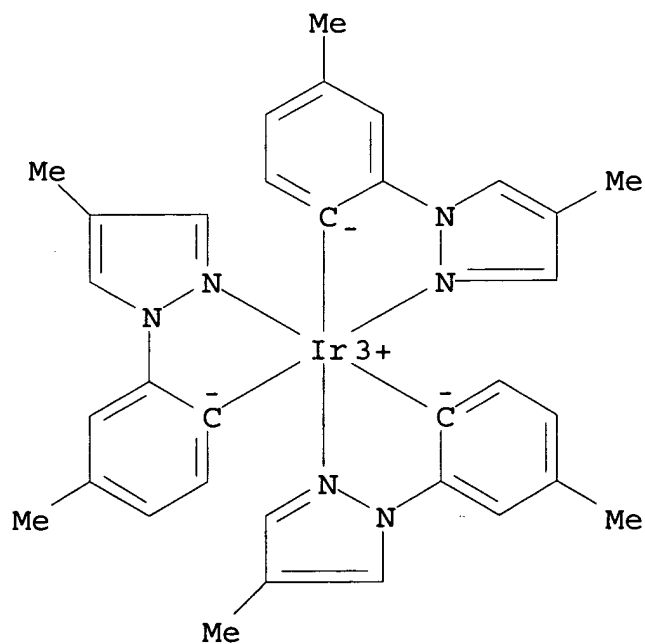
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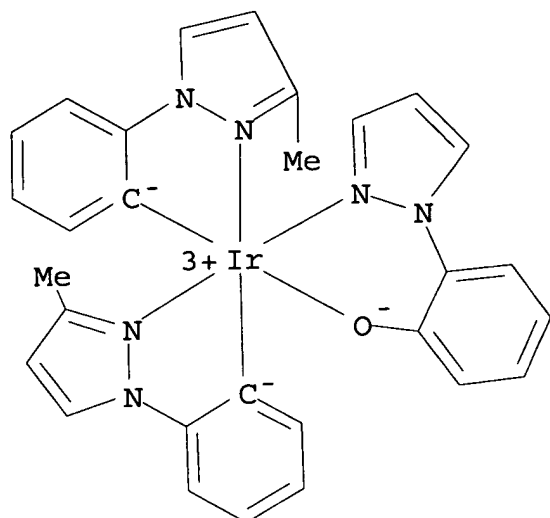
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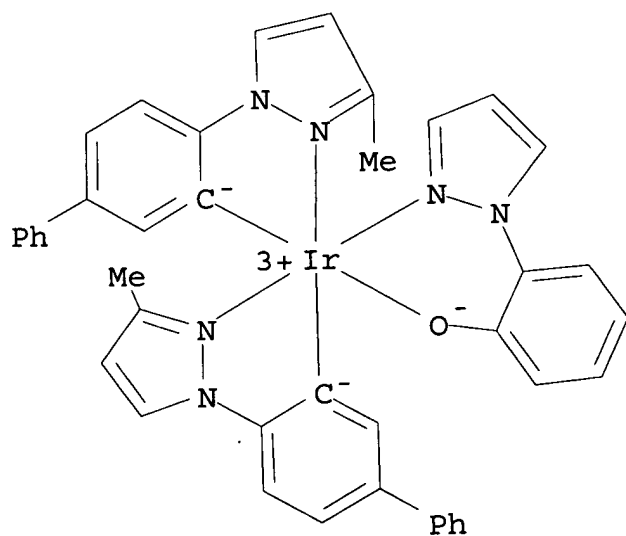
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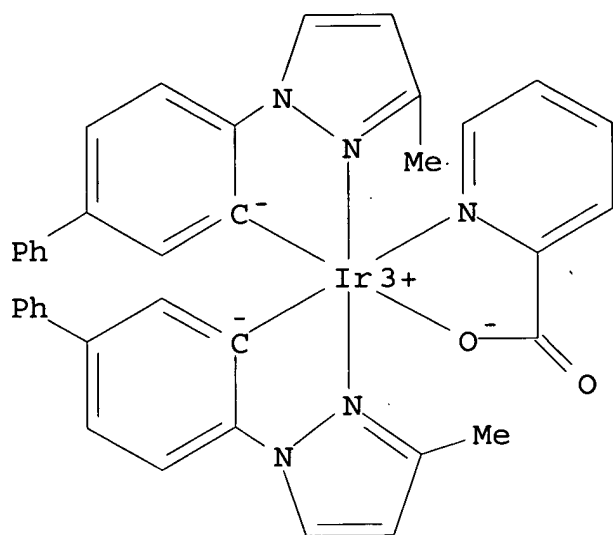
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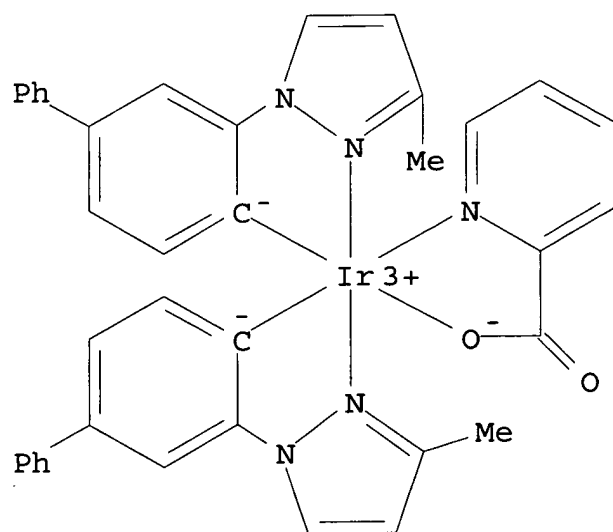
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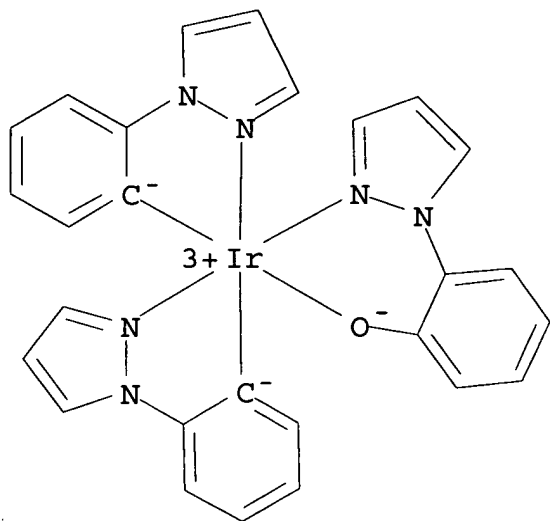
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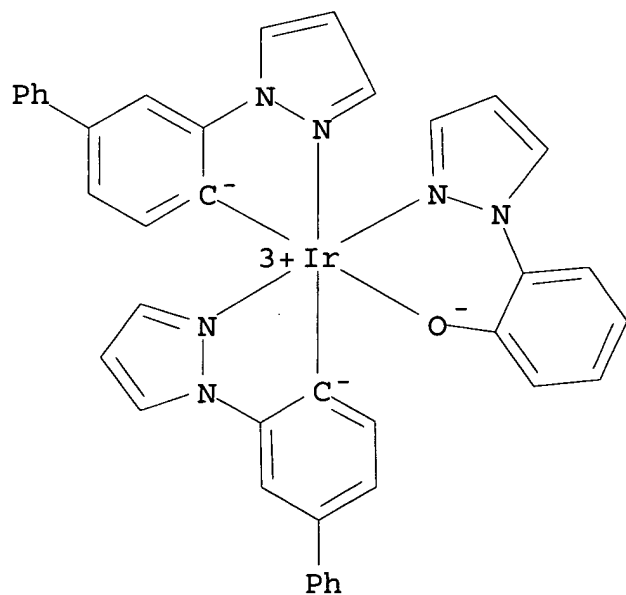
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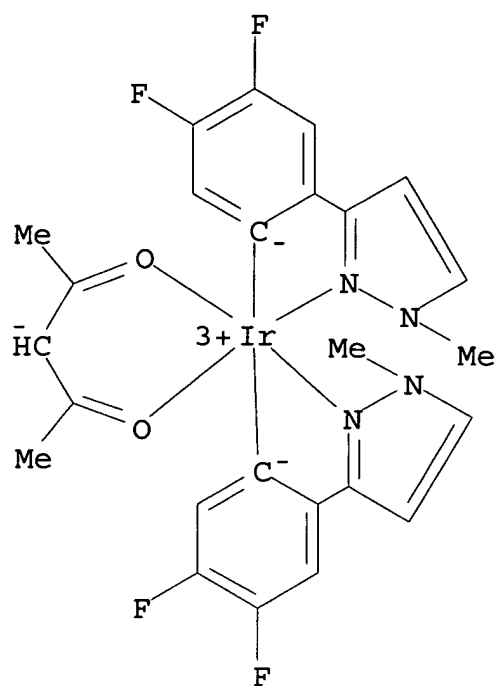
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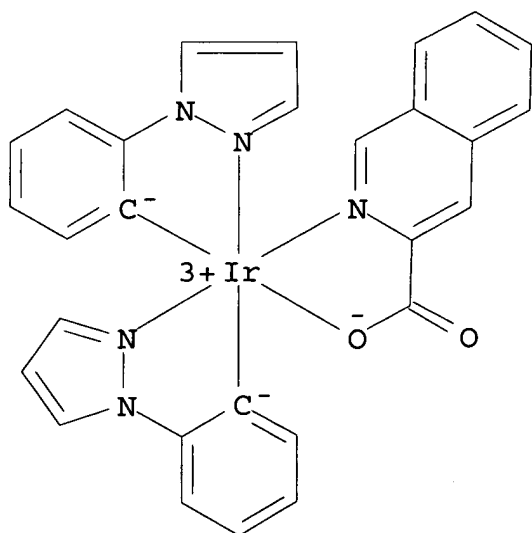
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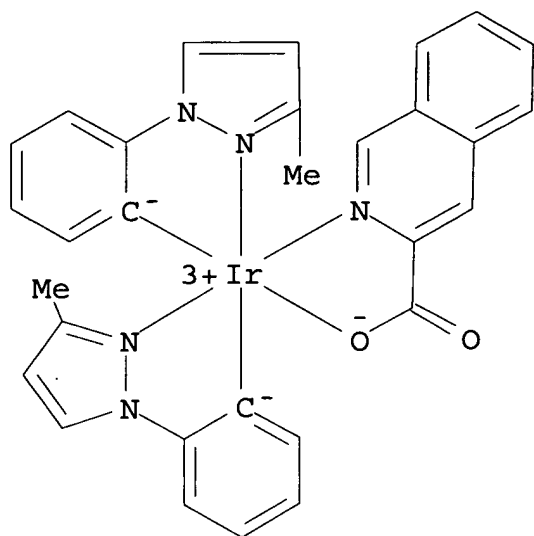
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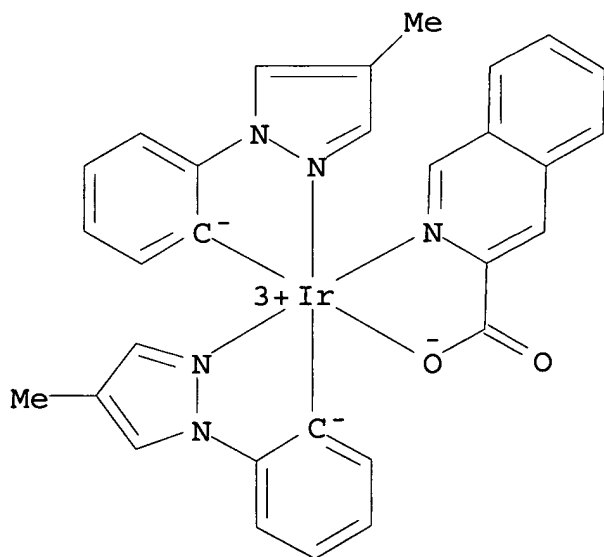
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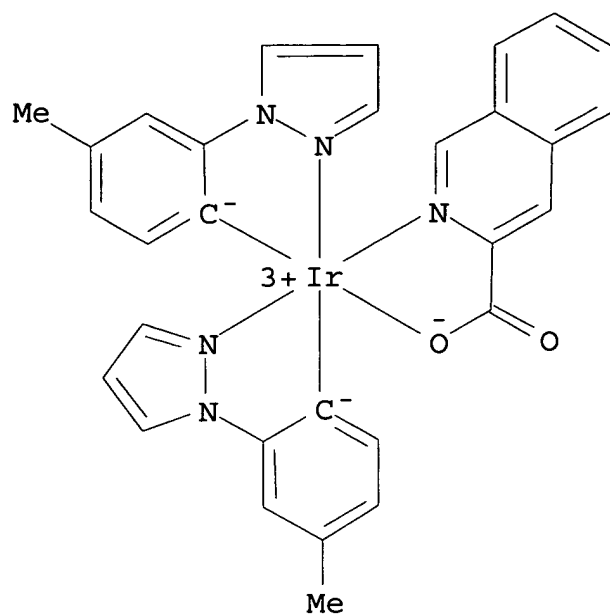
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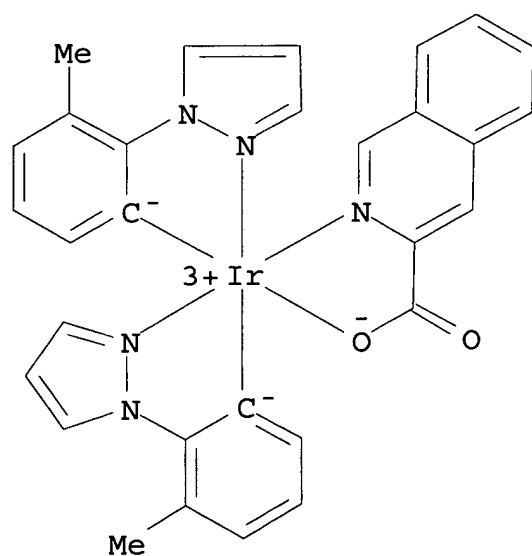
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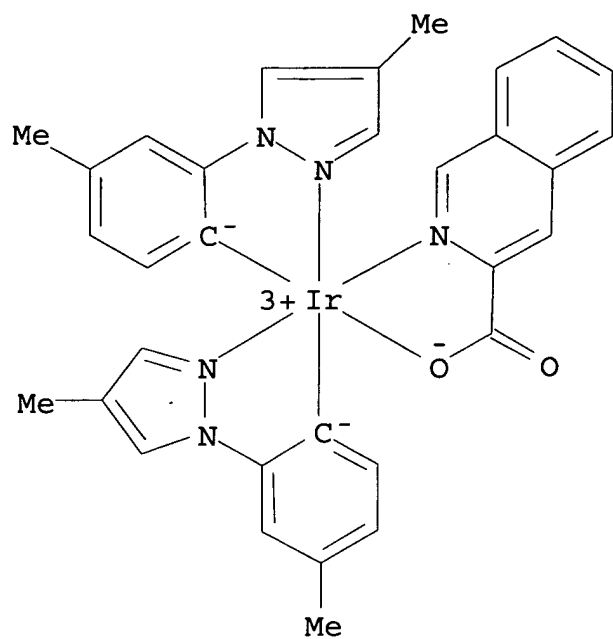




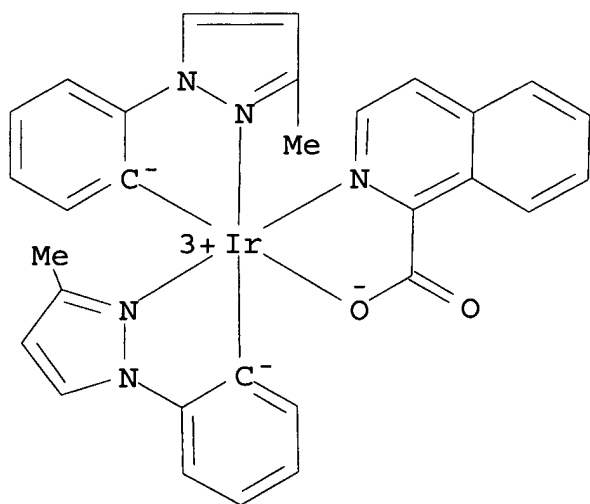
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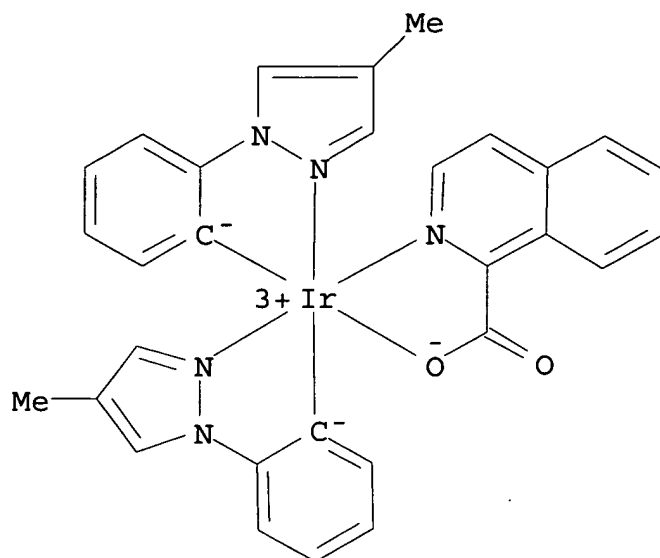
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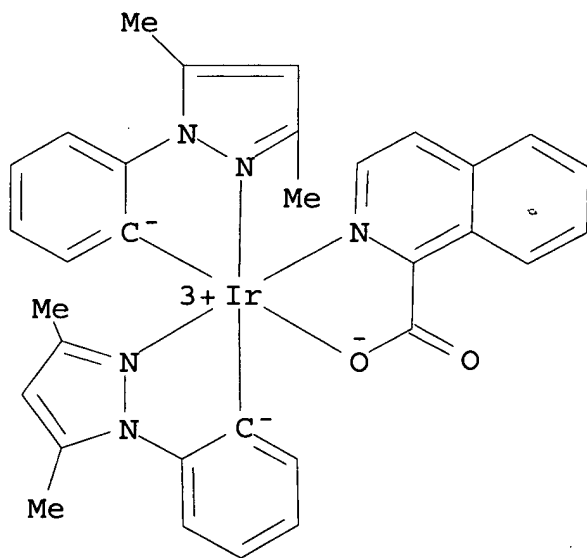
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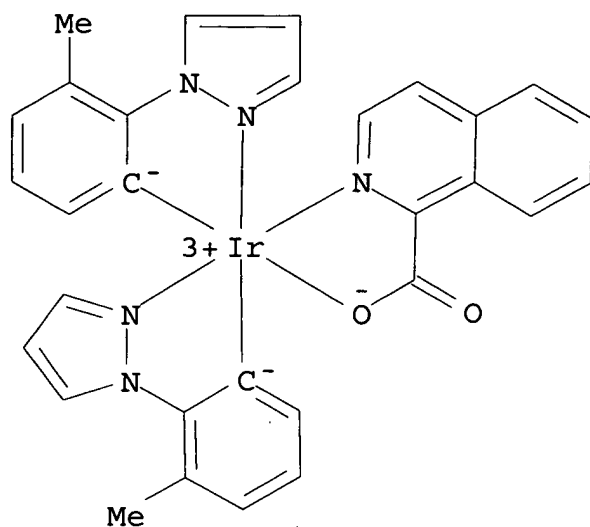
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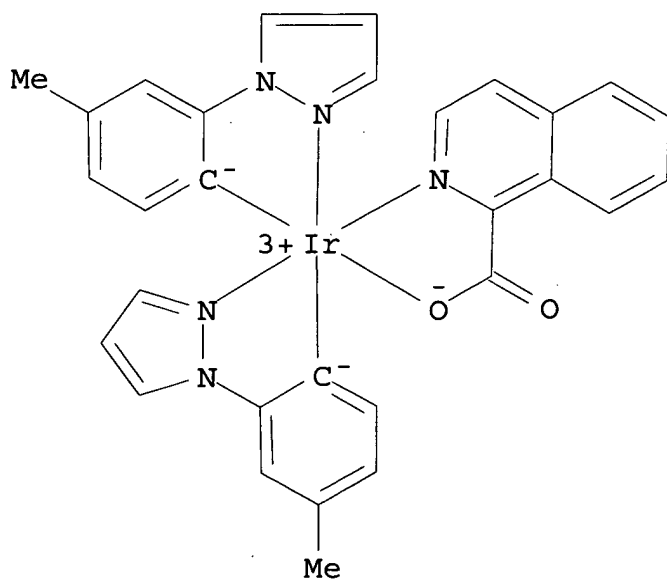
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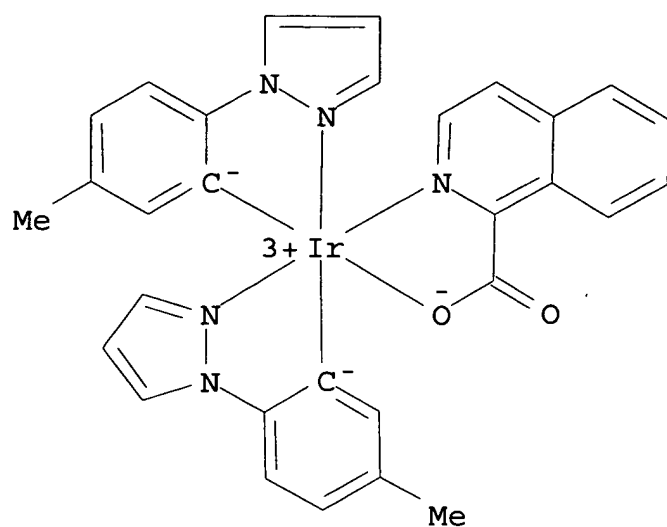
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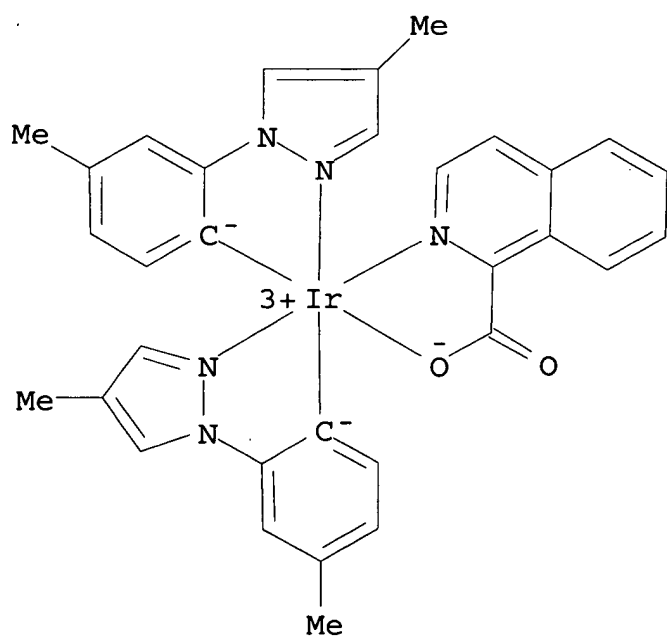
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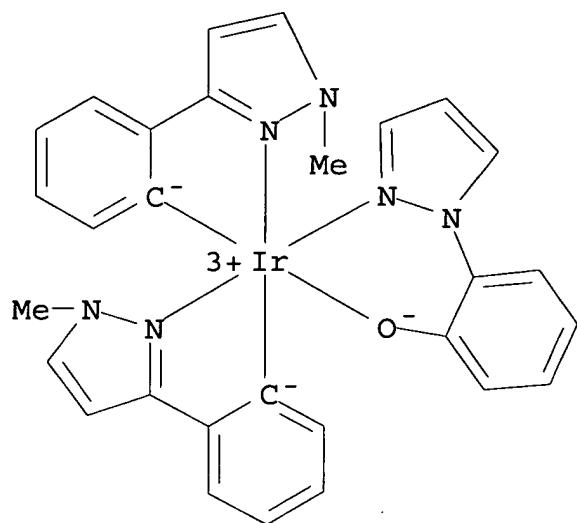
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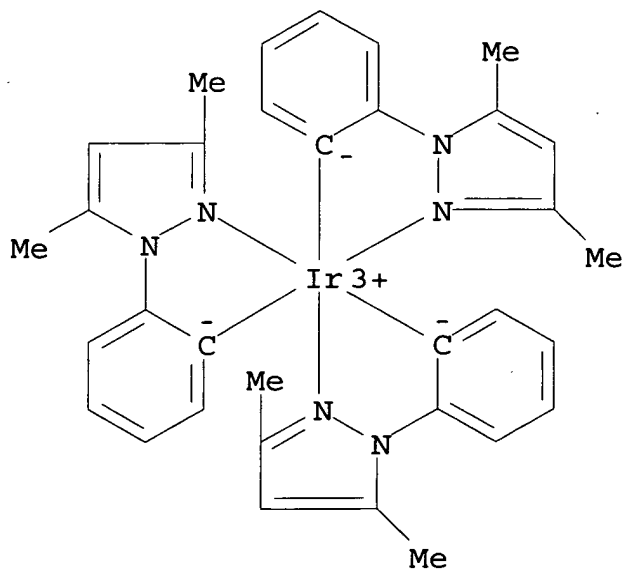
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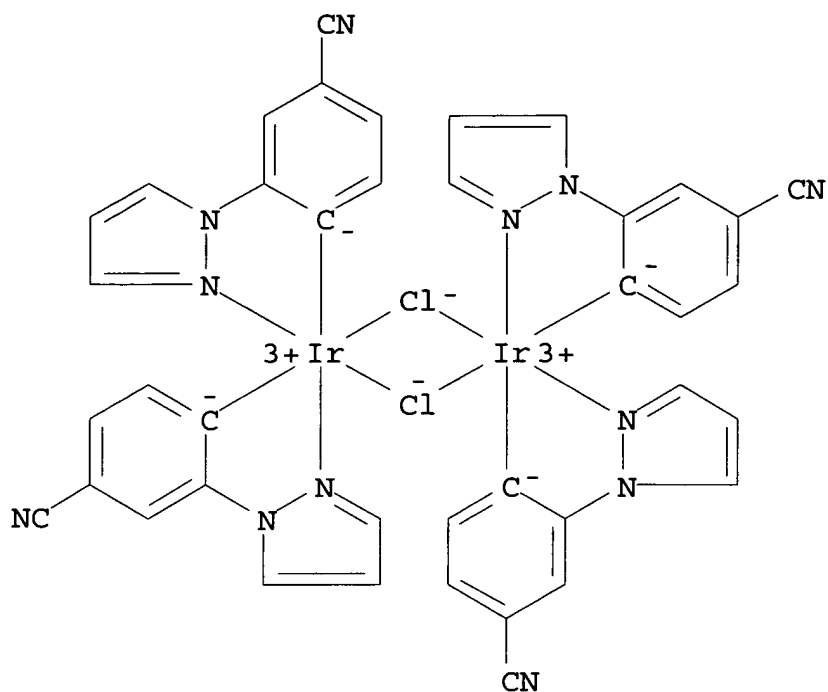
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RN 844478-08-6 HCAPLUS  
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IT 843611-06-3  
 (iridium complexes and other metal complexes with  
 heterocycle-containing ligands and organic electroluminescent  
 devices using them)  
 RN 843611-06-3 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED

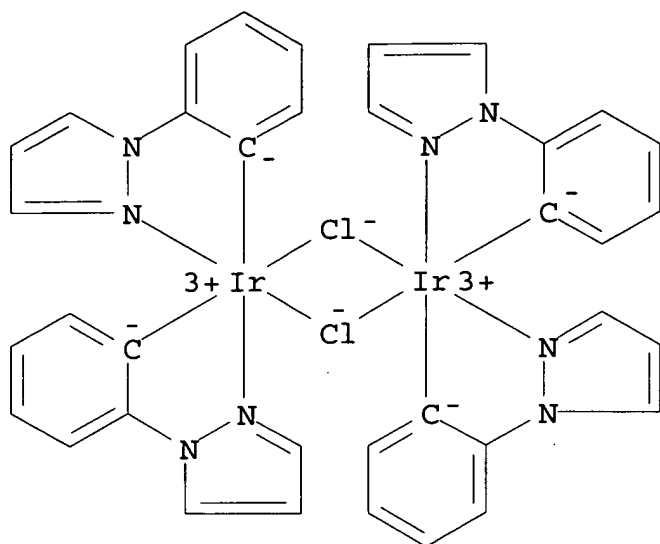


IT 57175-14-1P 631921-37-4P 843611-09-6P  
 843611-14-3P 843611-17-6P 843611-20-1P  
 843611-22-3P

(iridium complexes and other metal complexes with  
 heterocycle-containing ligands and organic **electroluminescent**  
 devices using them)

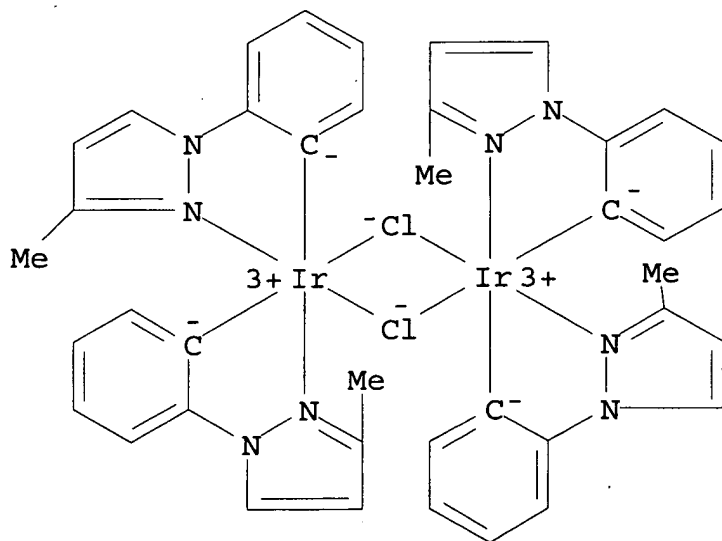
RN 57175-14-1 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(1H-pyrazol-1-yl)phenyl]di-,  
 stereoisomer (9CI) (CA INDEX NAME)



RN 631921-37-4 HCAPLUS

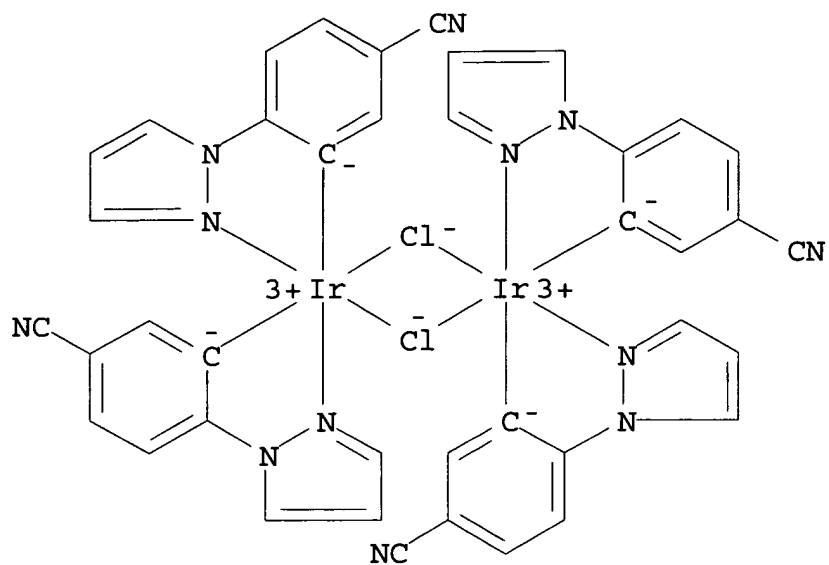
CN Iridium, di- $\mu$ -chlorotetrakis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di- (9Cl) (CA INDEX NAME)



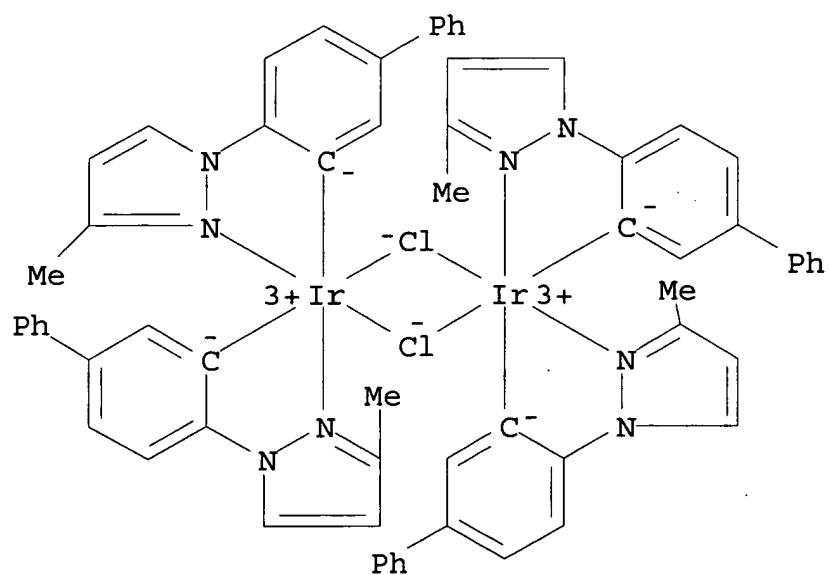
RN 843611-09-6 HCAPLUS

CN INDEX NAME NOT YET ASSIGNED

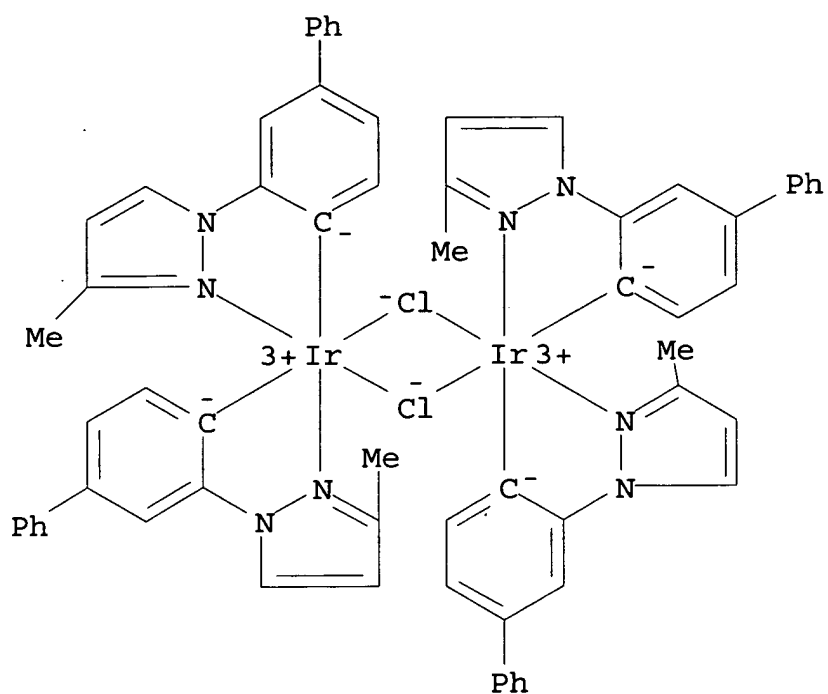




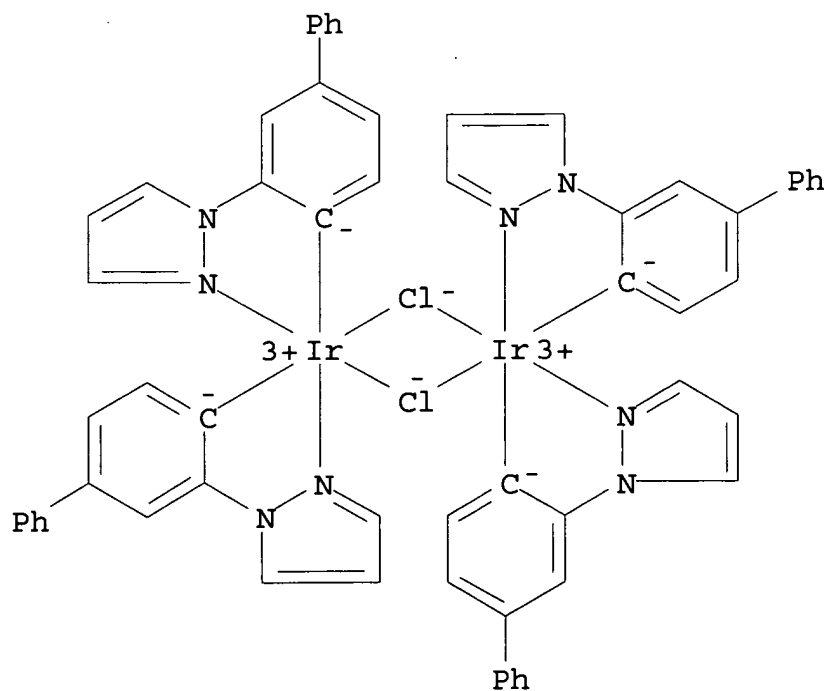
RN 843611-14-3 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



RN 843611-17-6 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED

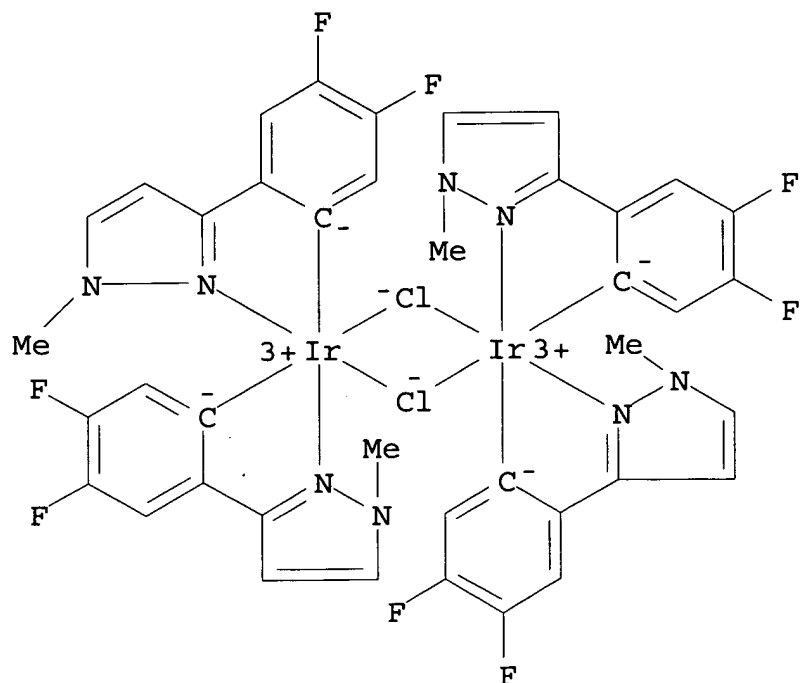


RN 843611-20-1 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



USHA SHRESTHA EIC 1700 REM 4B28

RN 843611-22-3 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED



IC ICM H05B033-14  
 ICS C09K011-06; C07D231-10; C07D233-54; C07D041-00; C07D043-00  
 NCL 428690000; 428917000; 313504000; 313506000; 546005000; 546010000;  
 548103000; 548106000  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 Section cross-reference(s): 29, 76  
 ST iridium complex heterocycle ligand org **electroluminescent**  
 device  
 IT **Luminescent** substances  
 (electroluminescent; iridium complexes and other  
 metal complexes with heterocycle-containing ligands and  
 organic **electroluminescent** devices using them)  
 IT **Luminescent** substances  
 (iridium complexes and other metal complexes with  
 heterocycle-containing ligands and organic **electroluminescent**  
 devices using them)  
 IT **Electroluminescent** devices  
 (organic; iridium complexes and other metal complexes with

heterocycle-containing ligands and organic **electroluminescent** devices using them)

IT 843611-43-8 843611-44-9 843611-45-0  
843611-46-1 843611-47-2 843611-48-3  
843611-49-4 843611-50-7 843611-51-8  
843611-52-9 843611-53-0 843611-54-1  
843611-55-2 843611-56-3 843611-57-4  
843611-58-5 843611-59-6 843611-60-9  
843611-61-0

(iridium complexes and other metal complexes with heterocycle-containing ligands and organic **electroluminescent** devices using them)

IT 669067-97-4P 832109-94-1P 843611-07-4P  
843611-08-5P 843611-10-9P 843611-11-0P  
843611-12-1P 843611-13-2P 843611-15-4P  
843611-16-5P 843611-18-7P 843611-19-8P  
843611-21-2P 843611-23-4P 843611-24-5P  
843611-26-7P 843611-27-8P 843611-28-9P  
843611-29-0P 843611-30-3P 843611-31-4P  
843611-32-5P 843611-33-6P 843611-34-7P  
843611-35-8P 843611-36-9P 843611-37-0P  
843611-38-1P 843611-39-2P 843611-40-5P  
843611-41-6P 843611-42-7P 844478-08-6P

, fac-Tris(3,5-dimethylphenylpyrazolo)iridium

(iridium complexes and other metal complexes with heterocycle-containing ligands and organic **electroluminescent** devices using them)

IT 60-35-5, Acetamide, reactions 70-11-1, 2-Bromoacetophenone  
77-78-1, Dimethyl sulfate 98-86-2, Acetophenone, reactions  
98-98-6, Picolinic acid 123-54-6, Acetylacetone, reactions  
288-13-1, Pyrazole 369-33-5 529-28-2, 2-Iodoanisole  
670-95-1, 4-Phenylimidazole 1126-00-7, n-Phenylpyrazole  
1128-54-7, 3-Methyl-1-phenylpyrazole 1131-16-4,  
3,5-Dimethyl-1-phenylpyrazole 3058-39-7, 4-Iodobenzonitrile  
6136-68-1 10025-83-9, Iridium chloride 15435-71-9, Sodium  
acetylacetonate, reactions 15635-87-7, Iridium  
trisacetylacetonate 19005-55-1 69113-59-3, 3-Iodobenzonitrile  
842162-93-0 842162-94-1 842162-95-2 843611-06-3

(iridium complexes and other metal complexes with heterocycle-containing ligands and organic **electroluminescent** devices using them)

IT 2411-77-0P 3463-26-1P 20662-90-2P 25699-82-5P 25699-83-6P  
57175-14-1P 83430-97-1P 207909-05-5P  
631921-37-4P 832109-93-0P 842162-96-3P  
843611-09-6P 843611-14-3P 843611-17-6P  
843611-20-1P 843611-22-3P 843611-25-6P

(iridium complexes and other metal complexes with

heterocycle-containing ligands and organic electroluminescent devices using them)

L16 ANSWER 2 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:34313 HCAPLUS

DOCUMENT NUMBER: 142:103508

TITLE: Organic light emitting device structure for obtaining chromaticity stability

INVENTOR(S): Tung, Yeh-Jiun; Ngo, Tan

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 36 pp., Cont.-in-part of U.S. Ser. No. 618,160.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.
DATE	-----	----	-----	-----
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	US 2005006642	A1	20050113	US 2004-761980
2004				
0120				
	US 2005006641	A1	20050113	US 2003-618160
2003				
0710				
PRIORITY APPLN. INFO.:			US 2003-618160	A2
2003				
0710				

AB An organic light emitting device is described comprising an anode; an emissive region; and a cathode, wherein the emissive region comprises a first emissive layer, comprising a first host material and a first emissive material, and a second emissive layer in phys. contact with the first emissive layer and comprising a second host material and a second emissive material, and wherein: the first emissive layer is nearer to the anode than

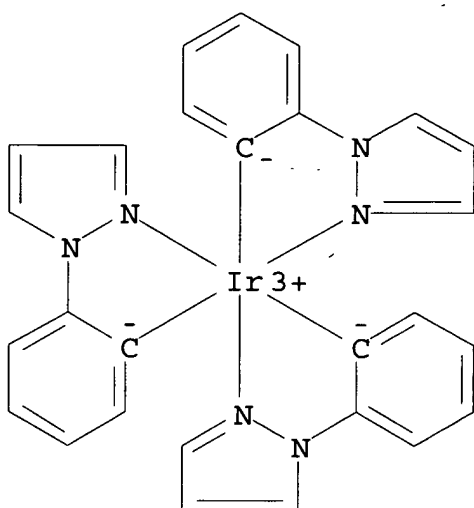
the second emissive layer, and at least one of the first emissive material or the second emissive material is a **phosphorescent** emissive material.

IT 359014-72-5

(**phosphorescent** material; organic light emitting device structures using **phosphorescent** phosphor for obtaining chromaticity stability)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC]- (9CI)  
(CA INDEX NAME)



IC ICM H01L035-24

NCL 257040000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73, 76

ST LED chromaticity **phosphorescence** phosphor

IT **Electroluminescent** devices

(displays; organic light emitting device structures using **phosphorescent** phosphor for obtaining chromaticity stability)

IT **Luminescent** screens

(**electroluminescent**; organic light emitting device structures using **phosphorescent** phosphor for obtaining chromaticity stability)

IT **Phosphorescence**

Phosphors

(organic light emitting device structures using **phosphorescent** phosphor for obtaining

chromaticity stability)

IT 147-14-8, Copper phthalocyanine. 1662-01-7, 4,7-Diphenyl-1,10-phenanthroline 2085-33-8, Alq3 19205-19-7, N,N'-Dimethylquinacridone 29261-33-4, Tetrafluoro-tetracyano-quinodimethane 50851-57-5 50926-11-9, Indium tin oxide 51325-91-8, DCM 58328-31-7, CBP 80730-94-5 123847-85-8, NPD 124729-98-2 126213-51-2, Poly(3,4-ethylenedioxythiophene) 146162-54-1 150405-69-9, TAZ 192198-85-9, TPBi 550378-78-4 (light emitting device containing; organic light emitting device structures using phosphorescent phosphor for obtaining chromaticity stability)

IT 94928-86-6 337526-95-1 359014-72-5 459133-59-6 512182-81-9 664374-04-3 665005-28-7 (phosphorescent material; organic light emitting device structures using phosphorescent phosphor for obtaining chromaticity stability)

L16 ANSWER 3 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:34312 HCAPLUS

DOCUMENT NUMBER: 142:103507

TITLE: Organic light emitting device structures for obtaining chromaticity stability

INVENTOR(S): Tung, Yeh-Jiun; Lu, Michael; Kwong, Raymond C.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 30 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

DATE	PATENT NO.	KIND	DATE	APPLICATION NO.
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	US 2005006641	A1	20050113	US 2003-618160
2003				
0710				
	US 2005006642	A1	20050113	US 2004-761980
2004				
0120				

PRIORITY APPLN. INFO.:

US 2003-618160

A2

2003

0710

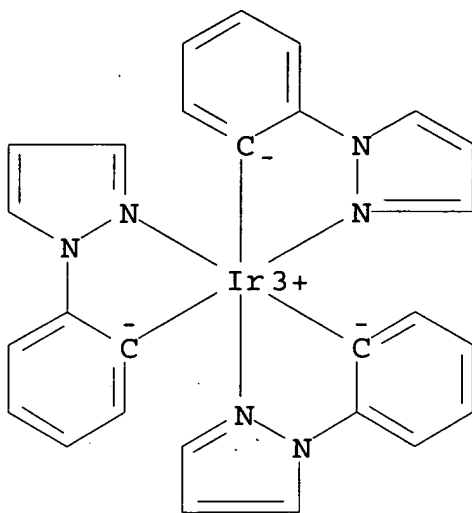
AB An organic **light emitting** device is described comprising an emissive region disposed between and elec. connected to an anode and a cathode, wherein the emissive region comprises: a first emissive layer, comprising a first host material and a first emissive material, and a second emissive layer in phys. contact with the first emissive layer and comprising a second host material and a second emissive material, and wherein the contact between the first emissive layer and the second emissive layer provides an electron injection barrier, a hole injection barrier, or both, the first emissive layer is nearer to the anode than the second emissive layer, at least one of the first emissive material or the second emissive material is a **phosphorescent** emissive material, and wherein the device **emits** with CIE x,y-coordinates that vary <.apprx.0.04 over the **luminance** range of about 1000 cd/m2 to about 20,000 cd/m2.

IT **359014-72-5**  
(**phosphorescent** material; organic **light emitting** device structures using **phosphorescent** phosphor for obtaining chromaticity stability)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC]- (9CI)  
(CA INDEX NAME)





IC ICM H01L051-00

NCL 257040000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73, 76

ST LED **phosphorescence** phosphor iridium complex  
chromaticity

IT **Electroluminescent** devices  
(displays; organic **light emitting** device  
structures using **phosphorescent** phosphor for  
obtaining chromaticity stability)

IT **Luminescent** screens  
(**electroluminescent**; organic **light  
emitting** device structures using **phosphorescent**  
phosphor for obtaining chromaticity stability)

IT **Phosphorescence**  
Phosphors  
(organic **light emitting** device structures  
using **phosphorescent** phosphor for obtaining  
chromaticity stability)

IT 147-14-8, Copper phthalocyanine. 1662-01-7, 4,7-Diphenyl-1,10-  
phenanthroline 2085-33-8, Alq3 19205-19-7,  
N,N'-Dimethylquinacridone 29261-33-4, Tetrafluoro-tetracyano-  
quinodimethane 50851-57-5 50926-11-9, Indium tin oxide  
51325-91-8, DCM 58328-31-7, CBP 123847-85-8, NPD

124729-98-2

126213-51-2, Poly(3,4-ethylenedioxythiophene) 146162-54-1

150405-69-9, TAZ 192198-85-9, TPBi 550378-78-4

(**light emitting** device containing; organic

**light emitting** device structures using  
**phosphorescent** phosphor for obtaining chromaticity  
stability)

IT 94928-86-6 337526-95-1 **359014-72-5** 459133-59-6  
512182-81-9 664374-04-3 665005-28-7

(**phosphorescent** material; organic **light**  
**emitting** device structures using **phosphorescent**  
phosphor for obtaining chromaticity stability)

L16 ANSWER 4 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:817901 HCAPLUS

DOCUMENT NUMBER: 141:340107

TITLE: Phenyl-pyrazole and carbazole-pyrazole  
derivative complexes and **light-**  
**emitting** devices using them

INVENTOR(S): Thompson, Mark E.; Tamayo, Arnold; Djurovich,  
Peter

PATENT ASSIGNEE(S): The University of Southern California, USA

SOURCE: PCT Int. Appl., 72 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE			
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WO 2004085450	A2	20041007	WO 2004-US9228

2004

0324

WO 2004085450 A3 20041125

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL,  
PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW,  
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY,  
CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,  
NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 2004253478

A1

20041216

US 2004-807738

2004

0324

PRIORITY APPLN. INFO.:

US 2003-457012P

P

2003

0324

OTHER SOURCE(S): MARPAT 141:340107

AB Heteroleptic compds. of (un)substituted phenyl-pyrazole ligands and heteroleptic and homoleptic compds. of (un)substituted carbazole-pyrazole ligands with metals having atomic wts. >40 are described. Compds. comprising a metal bonded to a first ligand that has a triplet energy corresponding to a wavelength that is greater than the wavelength corresponding to the triplet energy

of

every other ligand bound to the metal are also described. The metal is preferably selected from Ir, Pt, Pd, Rh, Re, Ru, Os, Ti, Pb, Bi, In, Sn, Sb, Te, Au, and Ag, especially Ir. Organic **light-emitting** devices employing the compds. in their **emitting** layers are also described.

IT 769950-80-3P 769950-81-4P 769950-82-5P  
769950-83-6P 769950-84-7P 769950-85-8P  
769950-86-9P 769950-87-0P 769950-88-1P  
769950-89-2P

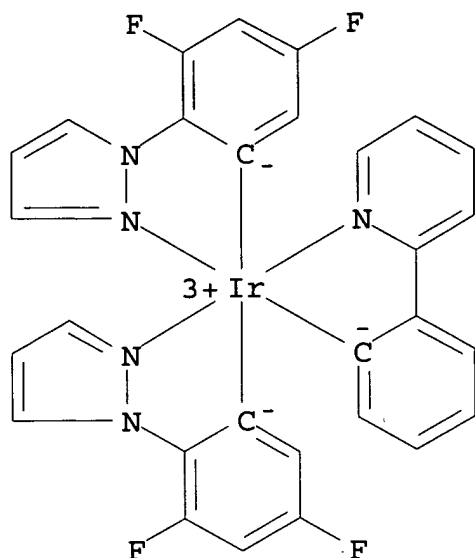
(phenyl-pyrazole and carbazole-pyrazole derivative complexes

and

**light-emitting** devices using them)

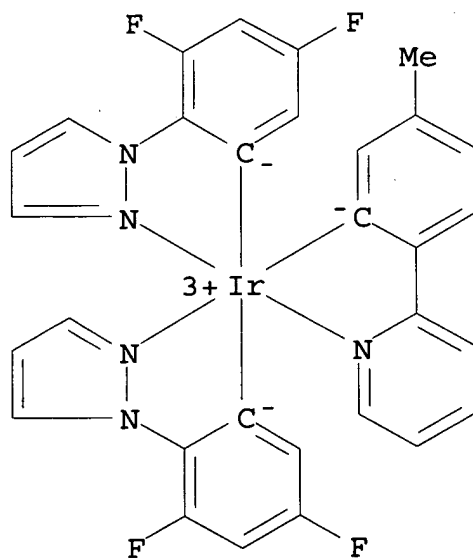
RN 769950-80-3 HCAPLUS

CN Iridium, bis[3,5-difluoro-2-(1H-pyrazol-1-yl-κN2)phenyl-κC] [2-(2-pyridinyl-κN)phenyl-κC] - (9CI) (CA  
INDEX NAME)



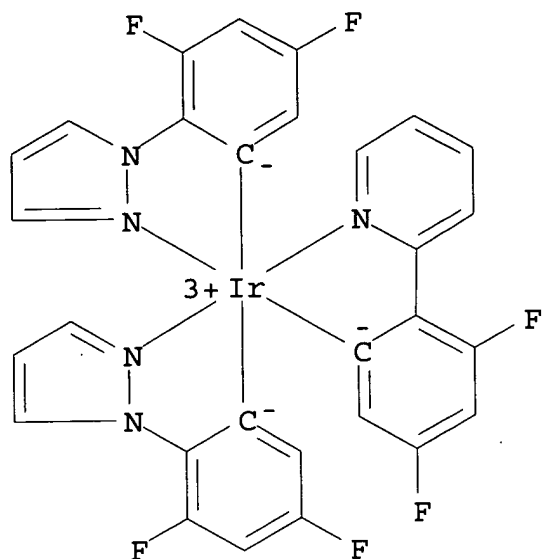
RN 769950-81-4 HCAPLUS

CN Iridium, bis[3,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C] [5-methyl-2-(2-pyridinyl- $\kappa$ N)phenyl- $\kappa$ C] - (9CI)  
(CA INDEX NAME)



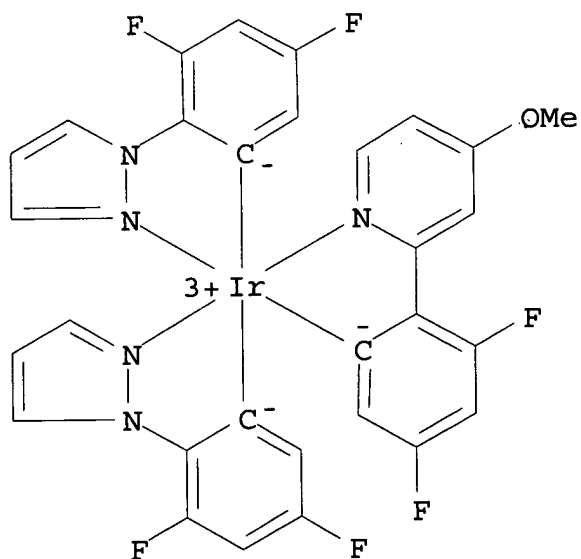
RN 769950-82-5 HCAPLUS

CN Iridium, bis[3,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C] [3,5-difluoro-2-(2-pyridinyl- $\kappa$ N)phenyl- $\kappa$ C] - (9CI)  
(CA INDEX NAME)



RN 769950-83-6 HCAPLUS

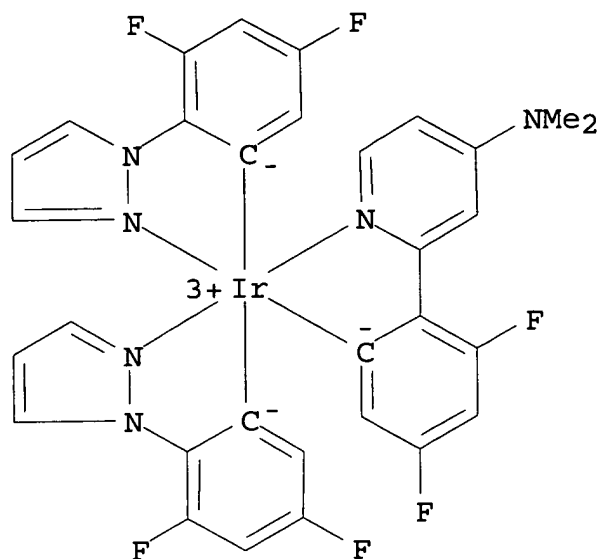
CN Iridium, [3,5-difluoro-2-(4-methoxy-2-pyridinyl-κN)phenyl-κC]bis[3,5-difluoro-2-(1H-pyrazol-1-yl-κN2)phenyl-κC] - (9CI) (CA INDEX NAME)



RN 769950-84-7 HCAPLUS

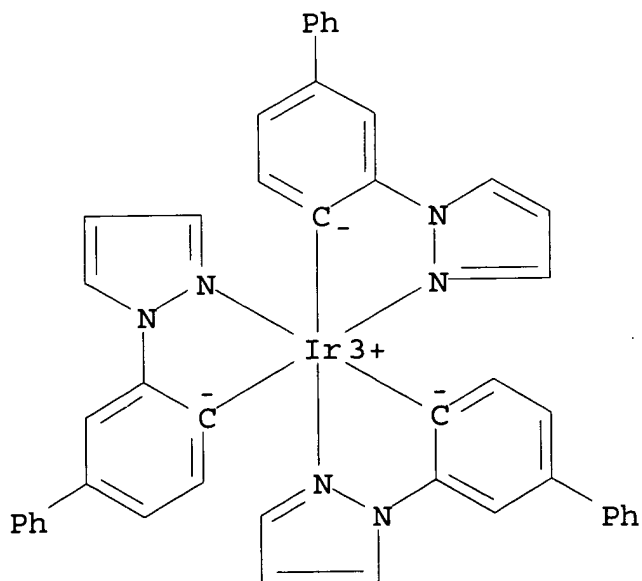
CN Iridium, bis[3,5-difluoro-2-(1H-pyrazol-1-yl-κN2)phenyl-κC] [2-[4-(dimethylamino)-2-pyridinyl-κN]-3,5-

difluorophenyl- $\kappa$ C] - (9CI) (CA INDEX NAME)



RN 769950-85-8 HCAPLUS

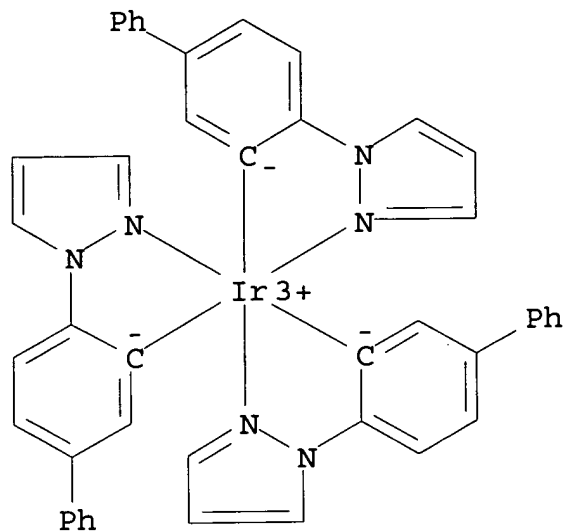
CN Iridium, tris[3-(1H-pyrazol-1-yl- $\kappa$ N2)[1,1'-biphenyl]-4-yl- $\kappa$ C] -, (OC-6-22) - (9CI) (CA INDEX NAME)



RN 769950-86-9 HCAPLUS

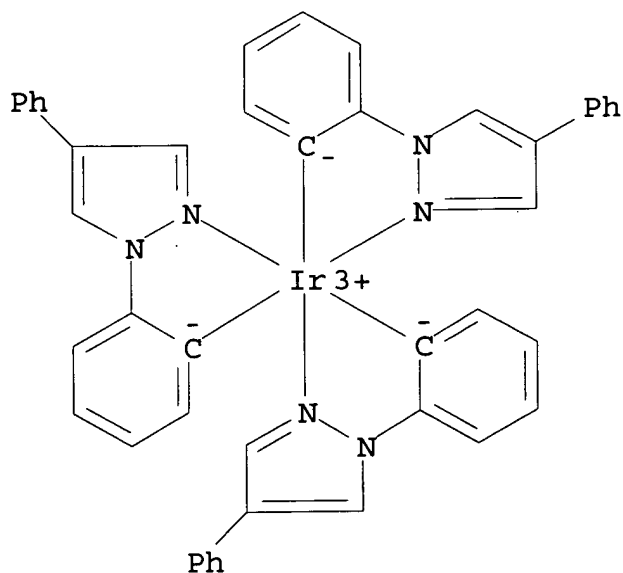
CN Iridium, tris[4-(1H-pyrazol-1-yl- $\kappa$ N2)[1,1'-biphenyl]-3-yl-

$\kappa C]$  -, (OC-6-22) - (9CI) (CA INDEX NAME)



RN 769950-87-0 HCAPLUS

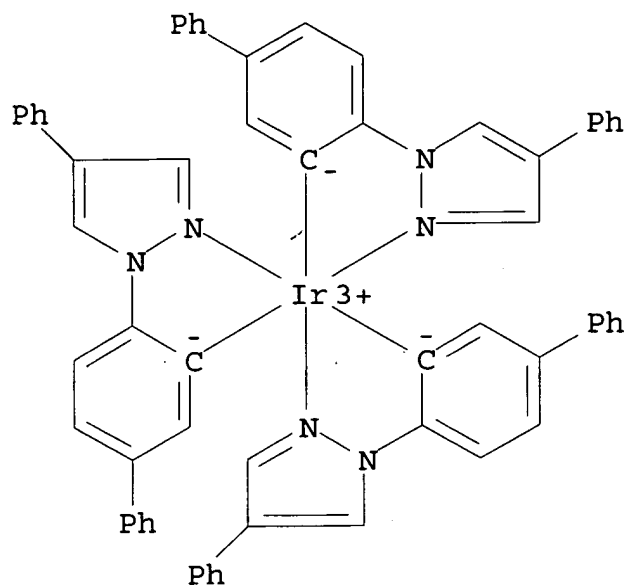
CN Iridium, tris[2-(4-phenyl-1H-pyrazol-1-yl- $\kappa N2$ )phenyl- $\kappa C]$  -, (OC-6-22) - (9CI) (CA INDEX NAME)



RN 769950-88-1 HCAPLUS

CN Iridium, tris[4-(4-phenyl-1H-pyrazol-1-yl- $\kappa N2$ )[1,1'-

biphenyl]-3-yl- $\kappa$ C]-, (OC-6-22)- (9CI) (CA INDEX NAME)

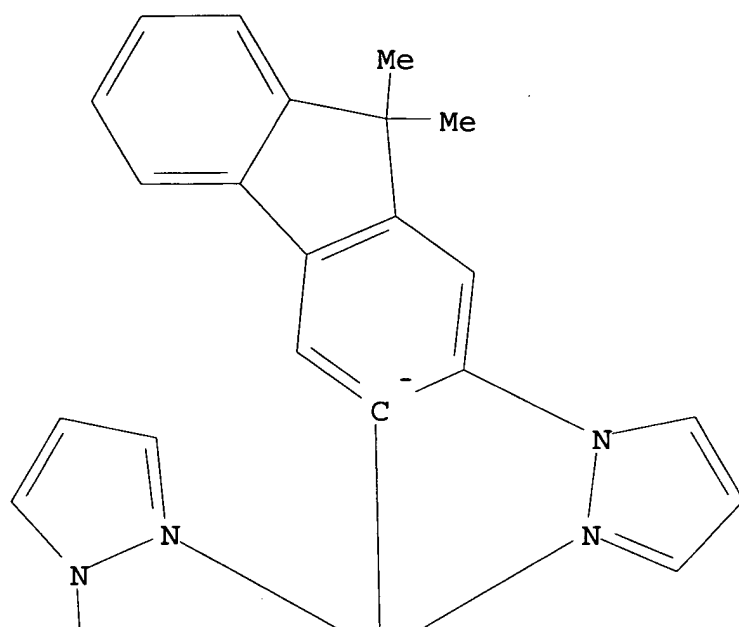


RN 769950-89-2 HCAPLUS

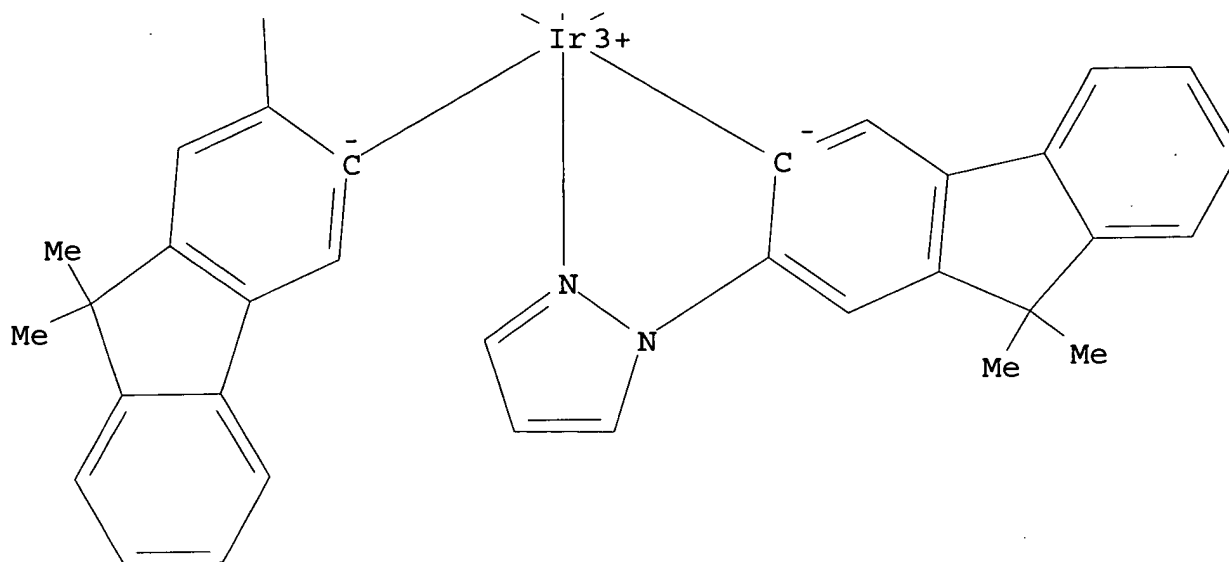
CN Iridium, tris[9,9-dimethyl-2-(1H-pyrazol-1-yl- $\kappa$ N2)-9H-fluoren-3-yl- $\kappa$ C]-, (OC-6-22)- (9CI) (CA INDEX NAME)



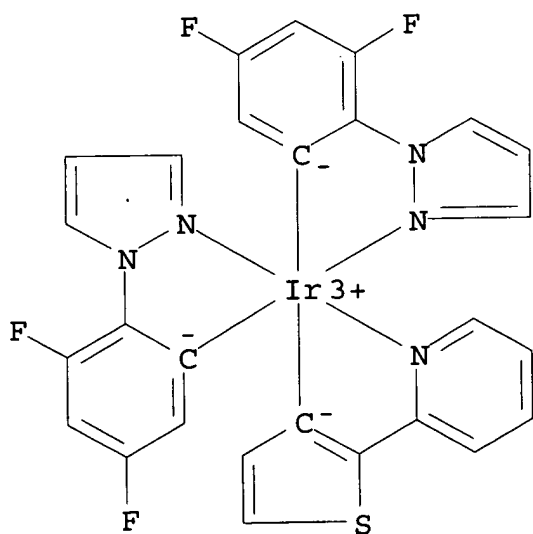
PAGE 1-A



PAGE 2-A



IT 769950-90-5  
 (phenyl-pyrazole and carbazole-pyrazole derivative complexes  
 and **light-emitting** devices using them)  
 RN 769950-90-5 HCAPLUS  
 CN Iridium, bis[3,5-difluoro-2-(1H-pyrazol-1-yl-κN2)phenyl-  
 κC] [2-(2-pyridinyl-κN)-3-thienyl-κC] - (9CI) (CA  
 INDEX NAME)



IC ICM C07F017-00  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 29, 76  
ST phenyl pyrazole deriv complex **light emitting** device; carbazole pyrazole deriv complex **light emitting device**  
IT **Electroluminescent** devices  
(organic; phenyl-pyrazole and carbazole-pyrazole derivative complexes  
and **light-emitting** devices using them)  
IT **Phosphorescent** substances  
(phenyl-pyrazole and carbazole-pyrazole derivative complexes  
and **light-emitting** devices using them)  
IT 769950-80-3P 769950-81-4P 769950-82-5P  
769950-83-6P 769950-84-7P 769950-85-8P  
769950-86-9P 769950-87-0P 769950-88-1P  
769950-89-2P  
(phenyl-pyrazole and carbazole-pyrazole derivative complexes  
and **light-emitting** devices using them)  
IT 7439-92-1D, Lead, compds. with organic ligands 7440-04-2D, Osmium,  
compds. with organic ligands 7440-05-3D, Palladium, compds.  
with organic ligands 7440-06-4D, Platinum, compds. with organic ligands  
7440-15-5D, Rhenium, compds. with organic ligands 7440-16-6D, Rhodium, compds. with organic ligands 7440-18-8D, Ruthenium, compds. with organic ligands 7440-22-4D, Silver, compds. with organic ligands 7440-31-5D, Tin, compds. with organic ligands 7440-32-6D, Titanium, compds. with organic ligands 7440-36-0D, Antimony, compds. with organic ligands 7440-57-5D, Gold, compds. with organic ligands 7440-69-9D, Bismuth, compds. with organic ligands 7440-74-6D, Indium, compds. with organic ligands 13494-80-9D, Tellurium, compds. with organic ligands **769950-90-5**  
(phenyl-pyrazole and carbazole-pyrazole derivative complexes  
and **light-emitting** devices using them)

L16 ANSWER 5 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2004:576336 HCAPLUS

DOCUMENT NUMBER: 141:267654  
 TITLE: Synthesis, photophysical and electrochemical properties, and biological labeling studies of **luminescent** cyclometalated iridium(III) bipyridine-aldehyde complexes  
 AUTHOR(S): Lo, Kenneth Kam-Wing; Chan, Joe Sai-Wan; Chung, Chi-Keung; Tsang, Vic Wing-Hang; Zhu, Nianrong  
 CORPORATE SOURCE: Department of Biology and Chemistry, City University of Hong Kong, Hong Kong, Kowloon, Peop. Rep. China  
 SOURCE: Inorganica Chimica Acta (2004), 357(10), 3109-3118  
 CODEN: ICHAA3; ISSN: 0020-1693  
 PUBLISHER: Elsevier Science B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 141:267654

AB Synthesis, characterization, and photophys. and electrochem. properties of a series of **luminescent** cyclometalated iridium(III) bipyridine-aldehyde complexes [Ir(N-C)2(bpy-CHO)](PF6) (HN-C = 2-phenylpyridine, Hppy (1); 2-(4-methylphenyl)pyridine, Hmppy (2); 1-phenylpyrazole, Hppz (3); 3-methyl-1-phenylpyrazole, Hmppz (4); 7,8-benzoquinoline, Hbzq (5); 2-phenylquinoline, Hpq (6); bpy-CHO = 4-formyl-4'-methyl-2,2'-bipyridine) is reported. The x-ray crystal structures of complexes 1 and 4 have been determined. On the basis of the photophys. data, the emission of these complexes is assigned to an excited state of predominantly triplet metal-to-ligand charge-transfer (3MLCT) ( $d\pi(\text{Ir}) \rightarrow \pi^*(\text{bpy-CHO})$ ) character. For complex 6, the excited state is also mixed with substantial (3IL) ( $\pi \rightarrow \pi^*$ ) (pq-) character. The protein bovine serum albumin has been labeled with these complexes to produce **luminescent** bioconjugates. The photophys. properties of the **luminescent** conjugates have also been investigated.

IT 756486-02-9P (crystal structure; synthesis, photophys., electrochem. properties, and bovine serum albumin labeling studies of **luminescent** cyclometalated iridium bipyridine-aldehyde complexes)

RN 756486-02-9 HCAPLUS  
 CN Iridium(1+), bis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C1](4'-methyl[2,2'-bipyridine]-4-carboxaldehyde-

$\kappa N1, \kappa N1'$ )-, (OC-6-14)-, hexafluorophosphate(1-),  
compd. with dichloromethane (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 75-09-2  
CMF C H2 Cl2

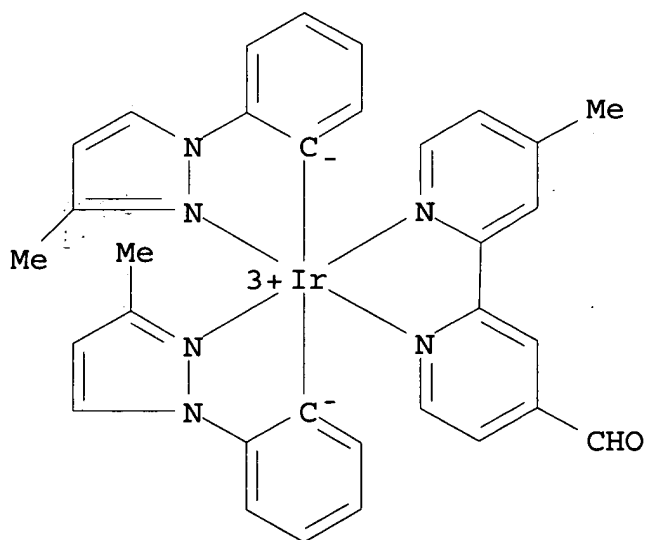


CM 2

CRN 756485-96-8  
CMF C32 H28 Ir N6 O . F6 P

CM 3

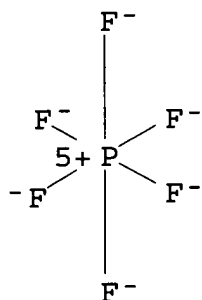
CRN 756485-95-7  
CMF C32 H28 Ir N6 O  
CCI CCS



CM 4

CRN 16919-18-9

CMF F6 P  
CCI CCS



IT 756485-96-8P  
(mol. structure; synthesis, photophys., electrochem.  
properties, and bovine serum albumin labeling studies of  
**luminescent** cyclometalated iridium bipyridine-aldehyde  
complexes)

RN 756485-96-8 HCAPLUS

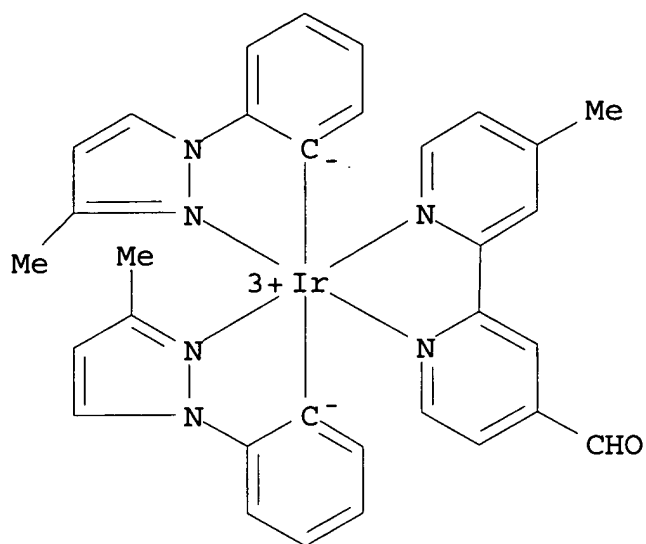
CN Iridium(1+), (4'-methyl[2,2'-bipyridine]-4-carboxaldehyde-  
 $\kappa$ N1, $\kappa$ N1')bis[2-(3-methyl-1H-pyrazol-1-yl-  
 $\kappa$ N2)phenyl- $\kappa$ C]-, (OC-6-14)-, hexafluorophosphate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 756485-95-7

CMF C32 H28 Ir N6 O

CCI CCS

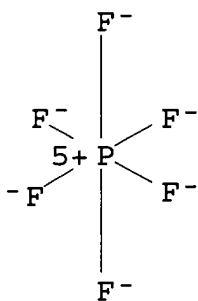


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



IT 756485-94-6P

(synthesis, photophys., electrochem. properties, and bovine serum albumin labeling studies of **luminescent** cyclometalated iridium bipyridine-aldehyde complexes)

RN 756485-94-6 HCAPLUS

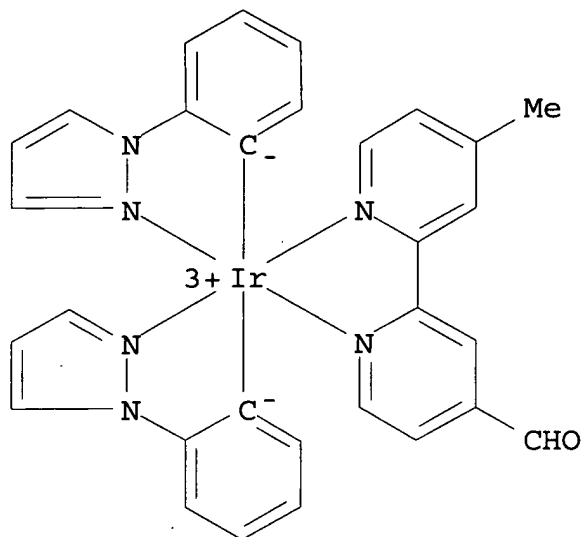
CN Iridium(1+), (4'-methyl[2,2'-bipyridine]-4-carboxaldehyde- $\kappa N1, \kappa N1'$ )bis[2-(1H-pyrazol-1-yl- $\kappa N2$ )phenyl- $\kappa C$ ]-, (OC-6-14)-, hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 756485-93-5

CMF C30 H24 Ir N6 O

CCI CCS

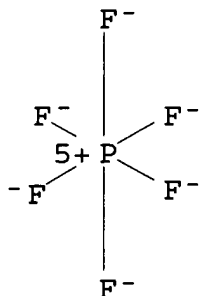


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



IT 57175-14-1 631921-37-4

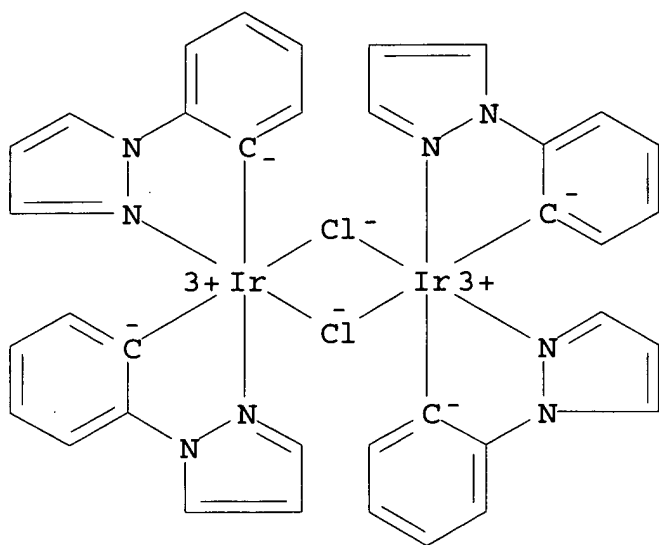
(synthesis, photophys., electrochem. properties, and bovine



serum albumin labeling studies of **luminescent**  
cyclometalated iridium bipyridine-aldehyde complexes)

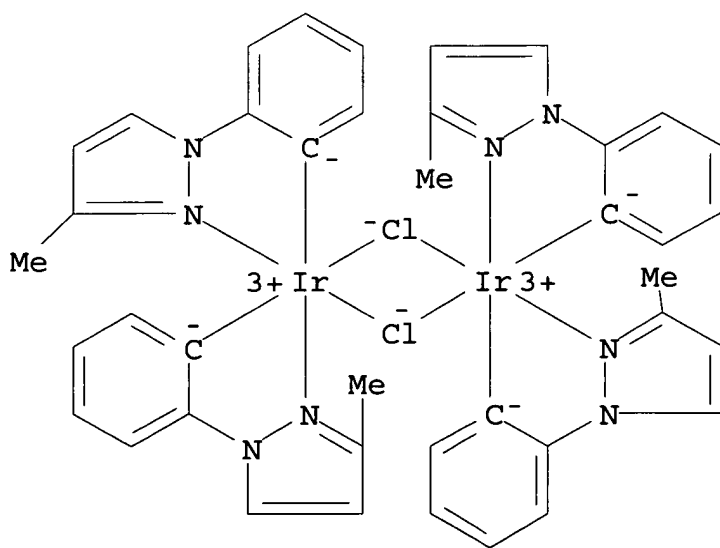
RN 57175-14-1 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(1H-pyrazol-1-yl)phenyl]di-,  
stereoisomer (9CI) (CA INDEX NAME)



RN 631921-37-4 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 6, 29, 72, 75

ST cyclometalated iridium bipyridine aldehyde complex prepn photophys  
 electrochem labeling; bovine serum albumin labeling  
**luminescent** cyclometalated iridium bipyridine aldehyde

IT Albumins, processes  
 (serum, bovine; synthesis, photophys., electrochem. properties,  
 and bovine serum albumin labeling studies of **luminescent** cyclometalated iridium bipyridine-aldehyde complexes)

IT Charge transfer interaction  
 Conjugation (molecular association)  
 Emission spectra  
 Excited state  
**Luminescence**  
 UV and visible spectra  
 (synthesis, photophys., electrochem. properties, and bovine serum albumin labeling studies of **luminescent** cyclometalated iridium bipyridine-aldehyde complexes)

IT 756486-01-8P **756486-02-9P**  
 (crystal structure; synthesis, photophys., electrochem. properties, and bovine serum albumin labeling studies of **luminescent** cyclometalated iridium bipyridine-aldehyde complexes)

IT 756485-90-2P **756485-96-8P**  
 (mol. structure; synthesis, photophys., electrochem. properties, and bovine serum albumin labeling studies of **luminescent** cyclometalated iridium bipyridine-aldehyde complexes)

IT 756485-92-4P **756485-94-6P** 756485-98-0P 756486-00-7P  
 (synthesis, photophys., electrochem. properties, and bovine serum albumin labeling studies of **luminescent** cyclometalated iridium bipyridine-aldehyde complexes)

IT **57175-14-1** 92220-65-0 104704-09-8 **631921-37-4**  
 632327-35-6 632327-36-7 632327-37-8  
 (synthesis, photophys., electrochem. properties, and bovine serum albumin labeling studies of **luminescent** cyclometalated iridium bipyridine-aldehyde complexes)

REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE

IN THE RE FORMAT

L16 ANSWER 6 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:569715 HCAPLUS  
 DOCUMENT NUMBER: 141:131052  
 TITLE: Organic **electroluminescent** device  
 with **light-emitting** layer  
 containing a metal complex as a host material  
 INVENTOR(S): Igarashi, Tatsuya; Ise, Toshihiro  
 PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 20 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

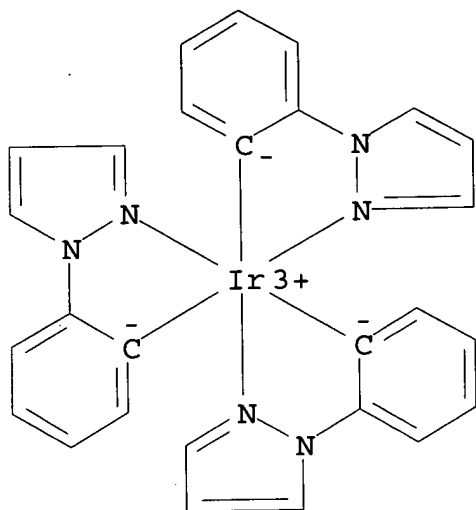
PATENT NO.	KIND	DATE	APPLICATION NO.
US 2004137267	A1	20040715	US 2003-738307
JP 2004221065	A2	20040805	JP 2003-413061
JP 2002-382454	A		

OTHER SOURCE(S): MARPAT 141:131052  
 AB Organic **electroluminescent** devices are described which  
 comprise a pair of electrodes; and at least one organic compound  
 layer  
 including a **light-emitting** layer between the  
 pair of electrodes, where the **light-emitting**  
 layer contains at least one host material and at least one  
**luminescent** material, and the host material is a metal  
 complex containing a metal in groups 4 to 11 or periods 5 to 6  
 of the  
 Periodic Table.  
 IT 359014-72-5

(organic **electroluminescent** device with **light-emitting** layer containing metal complex as host material)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC]- (9CI)  
(CA INDEX NAME)



IC ICM B32B009-00  
ICS B32B019-00

NCL 428690000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76, 78

ST org **electroluminescent** device metal complex host OLED

IT **Electroluminescent** devices

(organic **electroluminescent** device with **light-emitting** layer containing metal complex as host material)

IT Rare earth complexes

Transition metal complexes

(organic **electroluminescent** device with **light-emitting** layer containing metal complex as host material)

IT **Luminescent** substances

**Phosphorescent** substances

(organic **electroluminescent** device with **light-emitting** layer containing metal complex as host material and)

IT 7439-89-6D, Iron, compds. 7439-96-5D, Manganese, compds.  
7439-98-7D, Molybdenum, compds. 7440-02-0D, Nickel, compds.  
7440-04-2D, Osmium, compds. 7440-05-3D, Palladium, compds.  
7440-15-5D, Rhenium, compds. 7440-17-7D, Rubidium, compds.

7440-18-8D, Ruthenium, compds. 7440-22-4D, Silver, compds.  
 7440-24-6D, Strontium, compds. 7440-30-4D, Thulium, compds.  
 7440-31-5D, Tin, compds. 7440-32-6D, Titanium, compds.  
 7440-33-7D, Tungsten, compds. 7440-36-0D, Antimony, compds.  
 7440-39-3D, Barium, compds. 7440-46-2D, Cesium, compds.  
 7440-50-8D, Copper, compds. 7440-54-2D, Gadolinium, compds.  
 7440-57-5D, Gold, compds. 7440-67-7D, Zirconium, compds.  
 7440-74-6D, Indium, compds.

(organic **electroluminescent** device with **light-emitting** layer containing metal complex as host material)

IT 79183-73-6 82312-83-2 94928-86-6, Tris(2-phenylpyridine),  
 iridium 123847-85-8, NPD 134984-37-5 139092-78-7  
 303049-17-4 358974-66-0 **359014-72-5** 376367-93-0  
 377092-10-9 387859-70-3 435294-03-4 439801-48-6  
 690977-83-4 693794-98-8

(organic **electroluminescent** device with **light-emitting** layer containing metal complex as host material)

L16 ANSWER 7 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:492648 HCAPLUS  
 DOCUMENT NUMBER: 141:38742  
 TITLE: One-pot preparation of high-purity  
 ortho-metalated iridium complexes  
 INVENTOR(S): Konno, Hideo; Sasaki, Yoshiyuki  
 PATENT ASSIGNEE(S): National Institute of Advanced Industrial  
 Science and Technology, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE			
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JP 2004168755	A2	20040617	JP 2003-365964

2003

1027

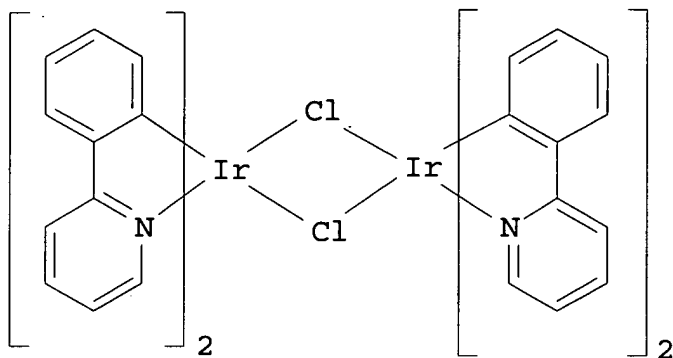
PRIORITY APPLN. INFO.: JP 2002-321913 A

2002

1106

OTHER SOURCE(S):  
GI

CASREACT 141:38742



I

AB The complexes, useful for organic **electroluminescent** devices, were prepared by treatment of Ir halides with stoichiometrically  $\geq 30$  equivalent organic ligands. Thus,  $\text{IrCl}_3$  was treated with 100 equiv 2-phenylpyridine in ethylene glycol under microwave irradiation with to give 60% tris(2-phenylpyridine)iridium with no Ir dimer I.

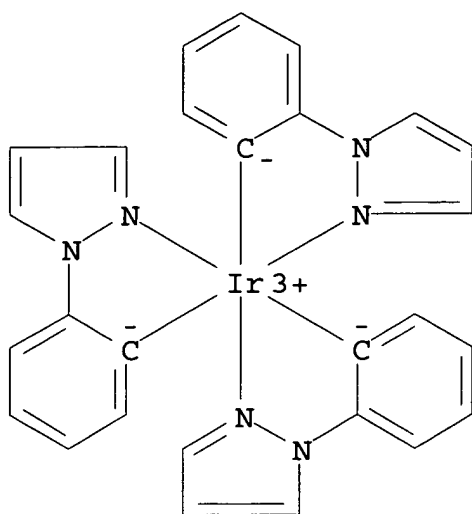
IT **562824-20-8P**

(one-pot preparation of high-purity ortho-metalated Ir complexes by

treatment of Ir halides with stoichiometrically  $\geq 30$  equivalent organic ligands)

RN 562824-20-8 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl- $\kappa\text{N}2$ )phenyl- $\kappa\text{C}$ ]-,  
(OC-6-22)- (9CI) (CA INDEX NAME)



IC ICM C07F015-00  
ICS H05B033-14; C07M007-00  
CC 29-13 (Organometallic and Organometalloidal Compounds)  
Section cross-reference(s): 73  
ST metalated iridium complex one pot prepn; iridium chloride  
phenylpyridine metalation; phenylpyridineiridium prepn iridium  
chloride phenylpyridine; org **electroluminescent** device  
metalated iridium complex  
IT **Electroluminescent** devices  
(organic; one-pot preparation of high-purity ortho-metalated  
Ir  
complexes for organic **electroluminescent** devices)  
IT 94928-86-6P, Tris(2-phenylpyridine)iridium 149005-33-4P  
153838-48-3P 337526-98-4P **562824-20-8P**  
(one-pot preparation of high-purity ortho-metalated Ir  
complexes by  
treatment of Ir halides with stoichiometrically  $\geq 30$   
equivalent organic ligands)

L16 ANSWER 8 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2004:384753 HCAPLUS  
DOCUMENT NUMBER: 141:123742  
TITLE: Novel **Luminescent** Cyclometalated  
Iridium(III) Diimine Complexes That Contain a  
Biotin Moiety  
AUTHOR(S): Lo, Kenneth Kam-Wing; Chan, Joe Sai-Wan; Lui,  
Lok-Hei; Chung, Chi-Keung  
CORPORATE SOURCE: Department of Biology and Chemistry, City  
University of Hong Kong, Hong Kong, Peop.  
Rep.

SOURCE: China  
Organometallics (2004), 23(13), 3108-3116  
CODEN: ORGND7; ISSN: 0276-7333  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 141:123742

AB The authors report the synthesis and photophys. and electrochem. properties of cyclometalated Ir(III) diimine complexes equipped with a biotin moiety [Ir(N-C)2(bpy-en-biotin)](PF6) (HN-C = 2-phenylpyridine, Hppy (1); 2-(4-methylphenyl)pyridine, Hmppy (2); 1-phenylpyrazole, Hppz (3); 3-methyl-1-phenylpyrazole, Hmppz (4); 7,8-benzoquinoline, Hbzq (5); 2-phenylquinoline, Hpq (6); bpy-en-biotin = 4-(N-((2-biotinamido)ethyl)aminomethyl)-4'-methyl-2,2'-bipyridine). Upon photoexcitation, complexes 1-6 display intense and long-lived emission in fluid solns. at 298 K and in low-temperature glass. The emission is assigned to a triplet metal-to-ligand charge-transfer (3MLCT) ( $d\pi(\text{Ir}) \rightarrow \pi^*(\text{bpy-en-biotin})$ ) excited state. However, the excited state of complex 6 is likely to possess substantial triplet intraligand (3IL) ( $\pi \rightarrow \pi^*$ ) (pq-) character. The authors have studied the binding of these Ir(III) biotin complexes to avidin

by 4'-hydroxyazobenzene-2-carboxylic acid (HABA) assays, **luminescence** titrns., and competitive assays using native biotin. Homogeneous competitive assays for biotin also were designed.

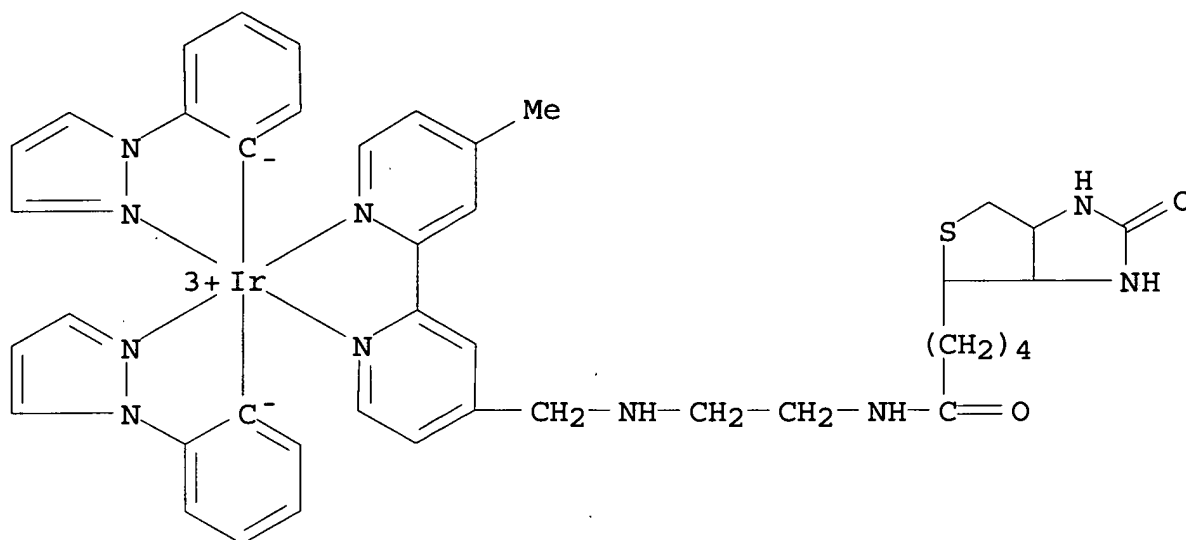
IT 721400-73-3DP, avidin conjugate 721400-75-5DP, avidin conjugate  
(first dissociation constant; preparation, **luminescence**, electrochem. and avidin binding properties of cyclometalated iridium diimine complexes that contain biotin moiety)

RN 721400-73-3 HCAPLUS  
CN Iridium(1+), [(3aS,4S,6aR)-hexahydro-N-[2-[[[4'-methyl[2,2'-bipyridin]-4-yl- $\kappa\text{N}1,\kappa\text{N}1'$ )]methyl]amino]ethyl]-2-oxo-1H-thieno[3,4-d]imidazole-4-pentanamide]bis[2-(1H-pyrazol-1-yl- $\kappa\text{N}2$ )phenyl- $\kappa\text{C}$ ]-, stereoisomer, hexafluorophosphate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 721400-72-2  
CMF C42 H46 Ir N10 O2 S  
CCI CCS



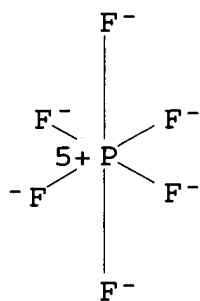


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



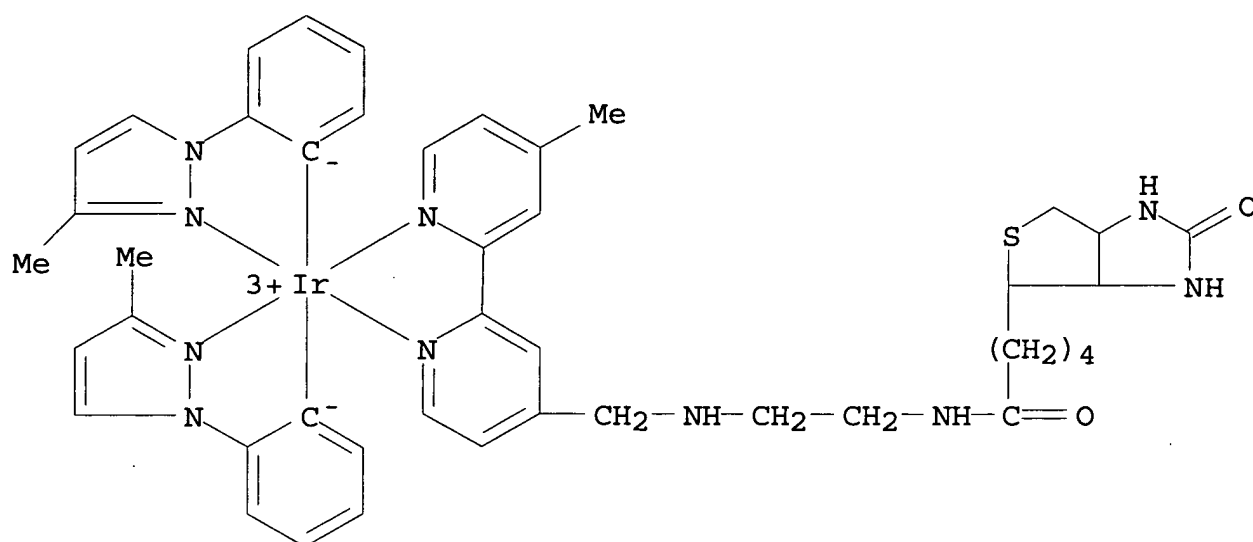
RN 721400-75-5 HCAPLUS

CN Iridium(1+), [(3aS,4S,6aR)-hexahydro-N-[2-[[[4'-methyl[2,2'-bipyridin]-4-yl-κN1,κN1']methyl]amino]ethyl]-2-oxo-1H-

thieno[3,4-d]imidazole-4-pentanamide]bis[2-(3-methyl-1H-pyrazol-1-yl-κN2)phenyl-κC]-, stereoisomer,  
hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

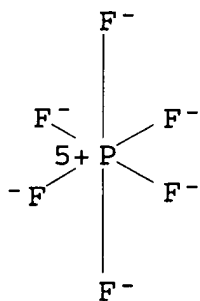
CM 1

CRN 721400-74-4  
 CMF C44 H50 Ir N10 O2 S  
 CCI CCS



CM 2

CRN 16919-18-9  
 CMF F6 P  
 CCI CCS



IT 721400-73-3P 721400-75-5P  
 (preparation, **luminescence**, electrochem. and avidin  
 binding properties of cyclometalated iridium diimine complexes  
 that contain biotin moiety)

RN 721400-73-3 HCAPLUS

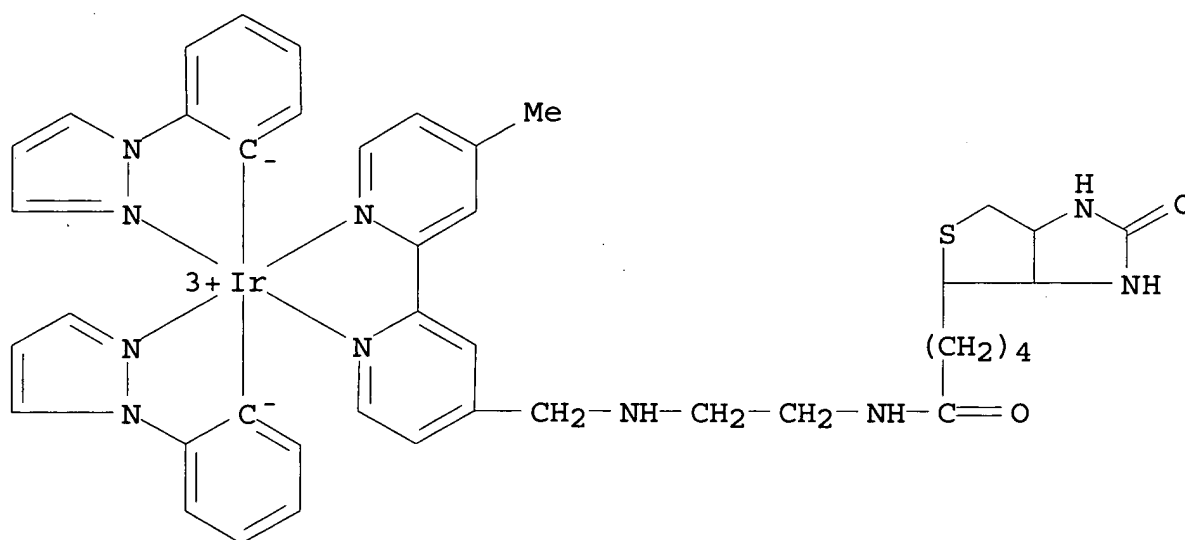
CN Iridium(1+), [(3aS,4S,6aR)-hexahydro-N-[2-[[[4'-methyl[2,2'-bipyridin]-4-yl- $\kappa$ N1, $\kappa$ N1']methyl]amino]ethyl]-2-oxo-1H-thieno[3,4-d]imidazole-4-pentanamide]bis[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]-, stereoisomer, hexafluorophosphate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 721400-72-2

CMF C42 H46 Ir N10 O2 S

CCI CCS

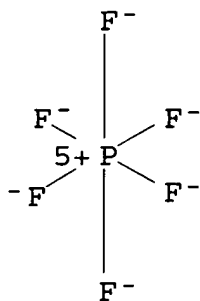


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



RN 721400-75-5 HCAPLUS

CN Iridium(1+), [(3aS,4S,6aR)-hexahydro-N-[2-[[[4'-methyl[2,2'-bipyridin]-4-yl-κN1,κN1')]methyl]amino]ethyl]-2-oxo-1H-

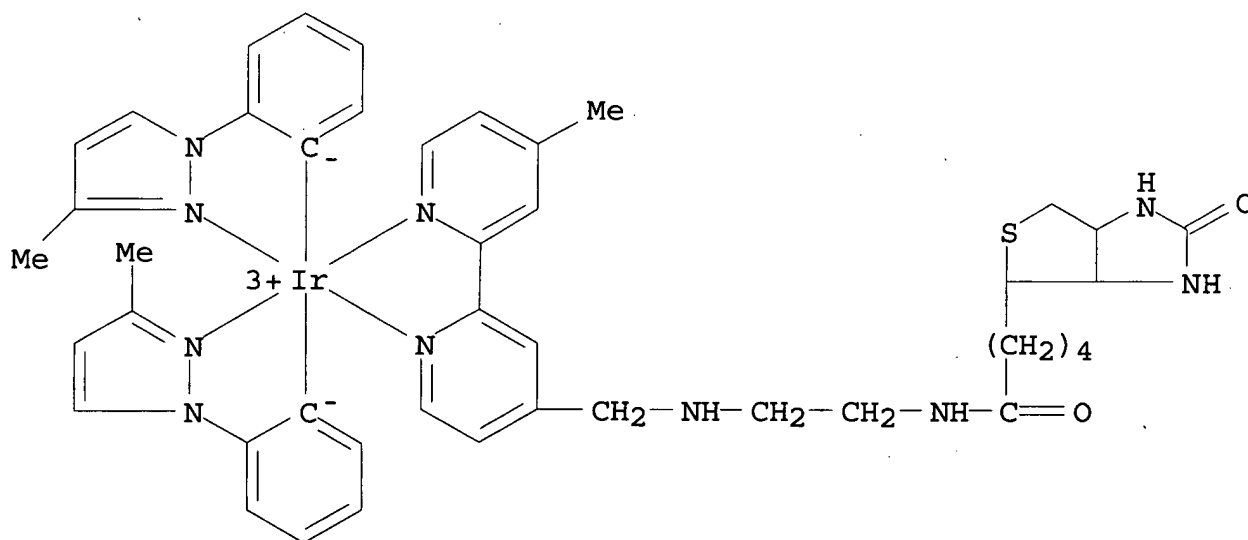
thieno[3,4-d]imidazole-4-pentanamide]bis[2-(3-methyl-1H-pyrazol-1-yl-κN2)phenyl-κC]-, stereoisomer,  
hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 721400-74-4

CMF C44 H50 Ir N10 O2 S

CCI CCS

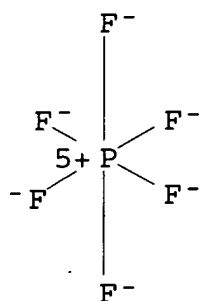


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS

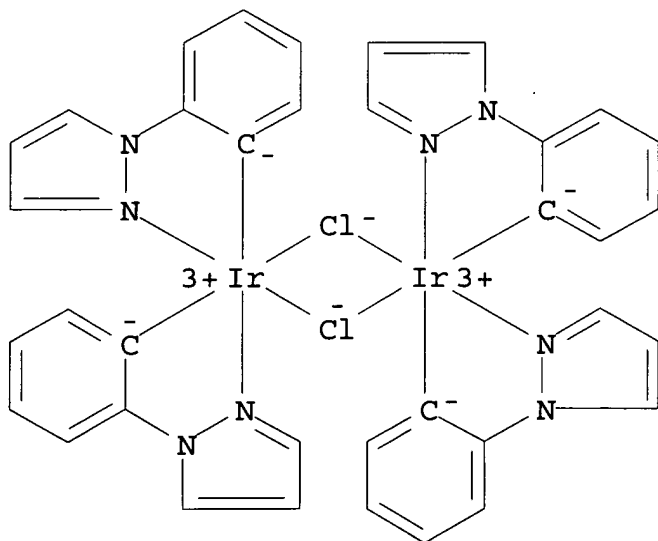


IT 57175-14-1 631921-37-4

(preparation, **luminescence**, electrochem. and avidin  
binding properties of cyclometalated iridium diimine complexes  
that contain biotin moiety)

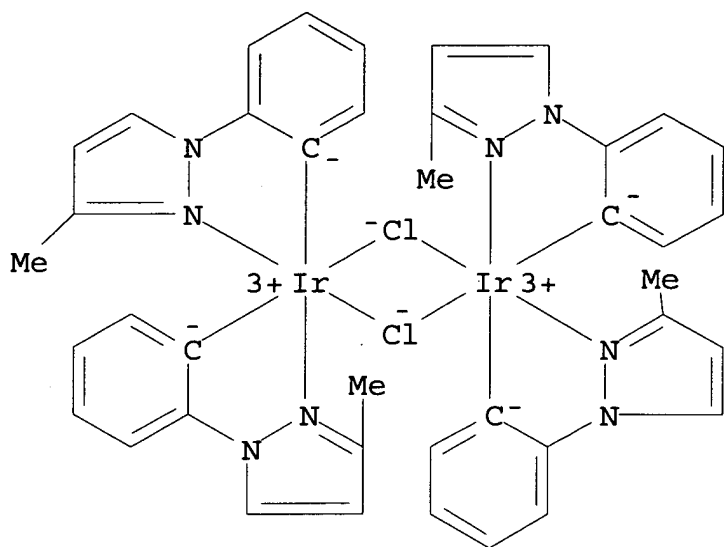
RN 57175-14-1 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(1H-pyrazol-1-yl)phenyl]di-,  
stereoisomer (9CI) (CA INDEX NAME)



RN 631921-37-4 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



- CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 9, 22, 26, 72, 73
- ST iridium cyclometalated biotinamidoethylaminomethylbipyridine  
 complex prepn **luminescence** electrochem avidin binding;  
 biotin homogeneous assay **luminescence** avidin competitive  
 binding iridium complex
- IT Emission spectra  
 (UV-visible; preparation, **luminescence**, electrochem. and  
 avidin binding properties of cyclometalated iridium diimine  
 complexes that contain biotin moiety)
- IT Avidins  
 (binding consts. and use in homogeneous assay for biotin;  
 preparation, **luminescence**, electrochem. and avidin binding  
 properties of cyclometalated iridium diimine complexes that  
 contain biotin moiety)
- IT Avidins  
 (conjugates, first dissociation consts.; preparation,  
**luminescence**, electrochem. and avidin binding  
 properties of cyclometalated iridium diimine complexes that  
 contain biotin moiety)
- IT Redox reaction  
 (electrochem.; preparation, **luminescence**, electrochem. and  
 avidin binding properties of cyclometalated iridium diimine  
 complexes that contain biotin moiety)
- IT UV and visible spectra  
 (emission; preparation, **luminescence**, electrochem. and  
 avidin binding properties of cyclometalated iridium diimine

- complexes that contain biotin moiety)
- IT Electric potential  
(ground and excited state; preparation, **luminescence**,  
electrochem. and avidin binding properties of cyclometalated  
iridium diimine complexes that contain biotin moiety)
- IT Biotinylation  
Charge transfer transition  
**Luminescence**  
Oxidation, electrochemical  
Reduction, electrochemical  
(preparation, **luminescence**, electrochem. and avidin  
binding properties of cyclometalated iridium diimine complexes  
that contain biotin moiety)
- IT 721400-69-7DP, avidin conjugate 721400-71-1DP, avidin conjugate  
**721400-73-3DP**, avidin conjugate **721400-75-5DP**,  
avidin conjugate 721400-77-7DP, avidin conjugate  
721400-79-9DP, avidin conjugate  
(first dissociation constant; preparation, **luminescence**,  
electrochem. and avidin binding properties of cyclometalated  
iridium diimine complexes that contain biotin moiety)
- IT 106294-60-4, (2,2'-Bipyridine)bis[2-(pyridin-2-  
yl)phenyl]iridium(1+) hexafluorophosphate  
(model; preparation, **luminescence**, electrochem. and avidin  
binding properties of cyclometalated iridium diimine complexes  
that contain biotin moiety)
- IT 58-85-5, Biotin  
(preparation, **luminescence**, electrochem. and avidin  
binding properties of cyclometalated iridium diimine complexes  
that contain biotin moiety)
- IT 721400-69-7P 721400-71-1P **721400-73-3P**  
**721400-75-5P** 721400-77-7P 721400-79-9P  
(preparation, **luminescence**, electrochem. and avidin  
binding properties of cyclometalated iridium diimine complexes  
that contain biotin moiety)
- IT **57175-14-1** 92220-65-0 104704-09-8,  
4-Formyl-4'-methyl-2,2'-bipyridine 111790-37-5 116563-45-2  
**631921-37-4** 632327-36-7 632327-37-8  
(preparation, **luminescence**, electrochem. and avidin  
binding properties of cyclometalated iridium diimine complexes  
that contain biotin moiety)
- IT 721400-80-2P  
(preparation, **luminescence**, electrochem. and avidin  
binding properties of cyclometalated iridium diimine complexes  
that contain biotin moiety)

REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS

AVAILABLE

## IN THE RE FORMAT

L16 ANSWER 9 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:345783 HCAPLUS

DOCUMENT NUMBER: 141:79244

TITLE: A synthesis and **luminescence** study  
of Ir(ppz)3 for organic **light-**  
**emitting** devicesAUTHOR(S): Nam, Eun Jeong; Kim, Jun Ho; Kim, Bong-Ok;  
Kim, Sung Min; Park, No Gill; Kim, Young Sik;  
Kim, Young Kwan; Ha, YunkyoungCORPORATE SOURCE: Department of Science, College of  
Engineering,Technology,  
Research Institute for Science andSOURCE: Hongik University, Seoul, S. Korea  
Bulletin of the Chemical Society of Japan  
(2004), 77(4), 751-755CODEN: BCSJA8; ISSN: 0009-2673  
PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Tris(1-phenyl- $\kappa$ C1-pyrazolato- $\kappa$ N2)iridium (Ir(ppz)3) was prepared and its **luminescence** properties were investigated for the application to organic **light-emitting** devices (OLEDs). The **photoluminescence** (PL) spectra of Ir(ppz)3 in dichloromethane showed a peak at 437 nm at room temperature. The **luminescent** lifetime of an Ir(ppz)3 film doped in CBP was found to be 218 ns, which indicated that its emission is **phosphorescent**. OLEDs were fabricated with doped films of Ir(ppz)3 in several hosts, and the **electroluminescence** (EL) peak was observed at 450 nm. The **luminance** of OLEDs was pure blue, with the CIE coordinates of  $x = 0.158$ ,  $y = 0.139$  at 100 cd/m<sup>2</sup>, but **luminous** efficiencies were low since the LUMO of Ir(ppz)3 is higher than those of the hosts used.

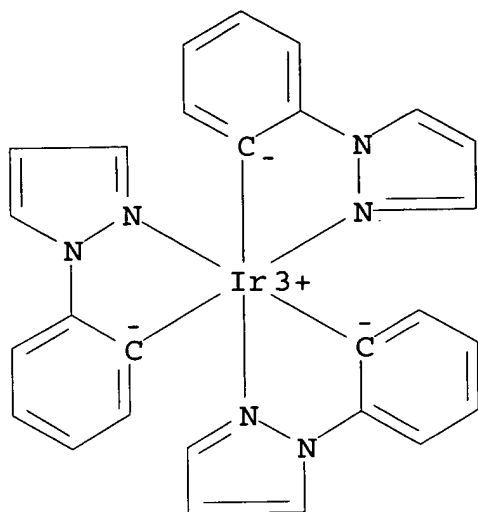
IT 359014-72-5P

(synthesis and photophysics tris(phenylpyrazolato)iridium and its application to organic **light-emitting** devices)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C] - (9CI)  
(CA INDEX NAME)





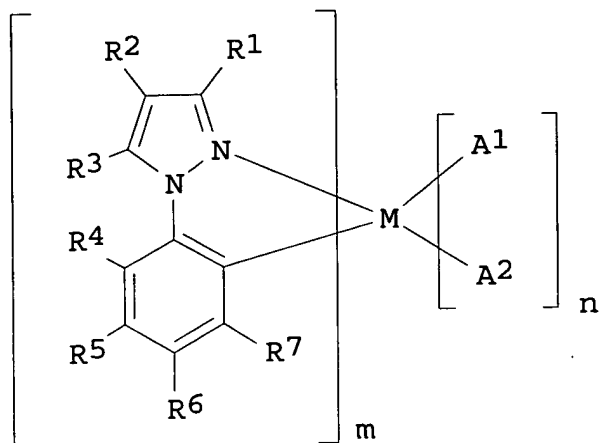
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73
- ST iridium phenylpyrazolato complex synthesis photophys OLED device;  
org **light emitting** device iridium  
phenylpyrazolato complex
- IT **Electroluminescent** devices  
(displays, OLED; organic **light-emitting** device  
containing tris(phenylpyrazolato)iridium in emissive layer)
- IT **Luminescent** screens  
(**electroluminescent**, OLED; organic **light-emitting** device containing tris(phenylpyrazolato)iridium in  
emissive layer)
- IT **Electroluminescent** devices  
Photoinduced energy transfer  
(organic **light-emitting** device containing  
tris(phenylpyrazolato)iridium in emissive layer)
- IT Band gap  
Electronic excitation  
HOMO (molecular orbital)  
LUMO (molecular orbital)  
**Luminescence**  
**Luminescence, electroluminescence**  
Oscillator strength  
**Phosphorescence**  
Singlet state excitation  
(synthesis and photophysics tris(phenylpyrazolato)iridium and  
its application to organic **light-emitting**  
devices)

IT 58328-31-7 148044-07-9 550378-78-4  
(emission layer host; organic **light-emitting**  
device containing tris(phenylpyrazolato)iridium in emissive  
layer)  
IT 2085-33-8, Alq3 4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-  
phenanthroline  
(exciton blocking layer; organic **light-emitting**  
device containing tris(phenylpyrazolato)iridium in emissive  
layer)  
IT 123847-85-8,  
N,N'-Bis(1-naphthyl)-N,N'-diphenyl-1,1'-biphenyl-4,4'-  
diamine  
(hole transport layer; organic **light-emitting**  
device containing tris(phenylpyrazolato)iridium in emissive  
layer)  
IT 50926-11-9, ITO  
(organic **light-emitting** device containing  
tris(phenylpyrazolato)iridium in emissive layer)  
IT 359014-72-5P  
(synthesis and photophysics tris(phenylpyrazolato)iridium and  
its application to organic **light-emitting**  
devices)  
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS  
AVAILABLE  
IN THE RE FORMAT

L16 ANSWER 10 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2004:203410 HCAPLUS  
DOCUMENT NUMBER: 140:261170  
TITLE: Organic **light emitting**  
devices with electron blocking layers  
INVENTOR(S): Thompson, Mark E.; Adamovich, Vadim; Ren,  
Xiaofan; Tamayo, Arnold; Djurovich, Peter I.  
PATENT ASSIGNEE(S): USA  
SOURCE: U.S. Pat. Appl. Publ., 30 pp., Cont.-in-part  
of U.S. Ser. No. 328,914.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 4  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE	-----	----	-----
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US 2004048101 A1 20040311 US 2003-402684  
2003  
0328  
US 2003124381 A1 20030703 US 2002-112257  
2002  
0329  
US 6869695 B2 20050322  
US 2003175553 A1 20030918 US 2002-328914  
2002  
1224  
US 6863997 B2 20050308  
PRIORITY APPLN. INFO.: US 2002-112257 A2  
2002  
0329  
US 2002-368496P P  
2002  
0329  
US 2002-328914 A2  
2002  
1224  
US 2001-344133P P  
2001  
1228  
OTHER SOURCE(S): MARPAT 140:261170  
GI



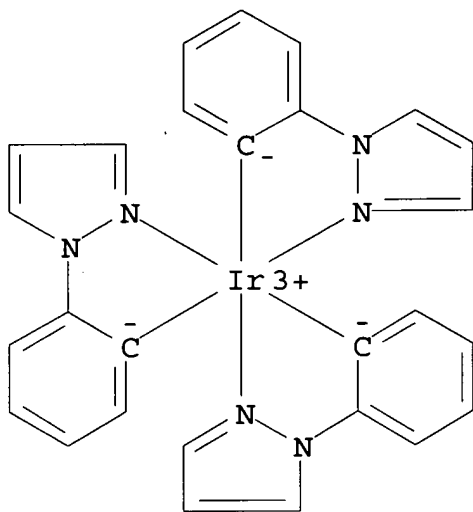
AB An electron blocking layer for LED is described comprising a compound of the formula I wherein M is a metal; each A1 and A2 is, independently, a monodentate ligand; or A1 and A2 are covalently joined together to form a bidentate ligand; each of R1-R7 is, independently, H, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF<sub>3</sub>, CnF<sub>2n+1</sub>, trifluorovinyl, CO<sub>2</sub>R, C(O)R, NR<sub>2</sub>, NO<sub>2</sub>, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl or a heterocyclic group, and addnl., or alternatively, any one or more of (R1,R2) or (R2,R3) or (R3,R4) or (R4,R5) or (R5,R6) or (R6,R7) together form, independently, a fused 5- to 6-member cyclic group, wherein the cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the fused 5- to 6-member cyclic group may be optionally substituted with one or more of alkyl, alkenyl, alkynyl, alkylaryl, CN, CF<sub>3</sub>, CnF<sub>2n+1</sub>, trifluorovinyl, CO<sub>2</sub>R, C(O)R, NR<sub>2</sub>, NO<sub>2</sub>, OR, halo; each R is independently H, alkyl, alkenyl, alkynyl, alkylaryl, and aryl; m = 1, 2, or 3; and n = 0, 1, or 2, wherein m + n = 3. The compound for electron blocking layer may show increased stability when incorporated into an organic **light emitting** device. An LED using the electron blocking layer is also described.

IT 359014-72-5 669067-96-3

(electron blocking layer; organic **light emitting** devices with electron blocking layers)

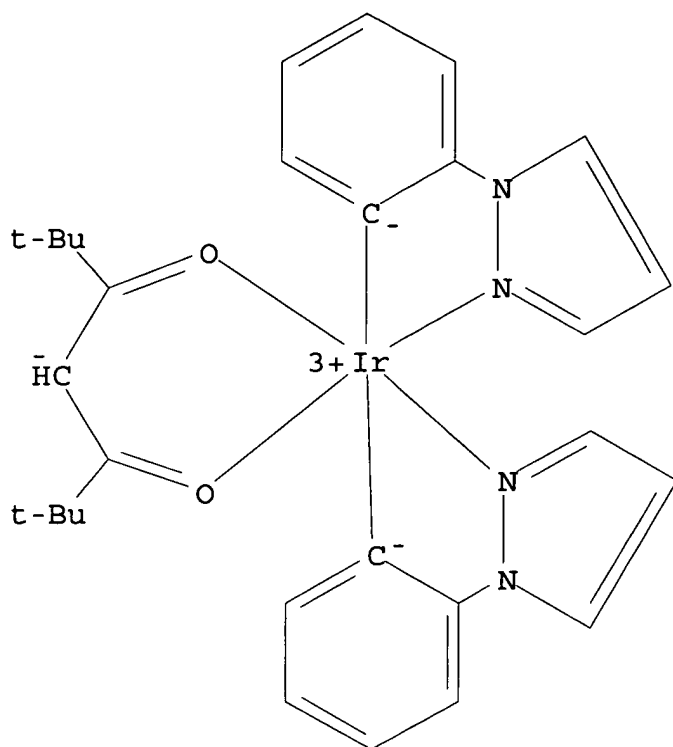
RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C] - (9CI)  
(CA INDEX NAME)



RN 669067-96-3 HCAPLUS

CN Iridium, bis[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C] (2,2,6,6-tetramethyl-3,5-heptanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)



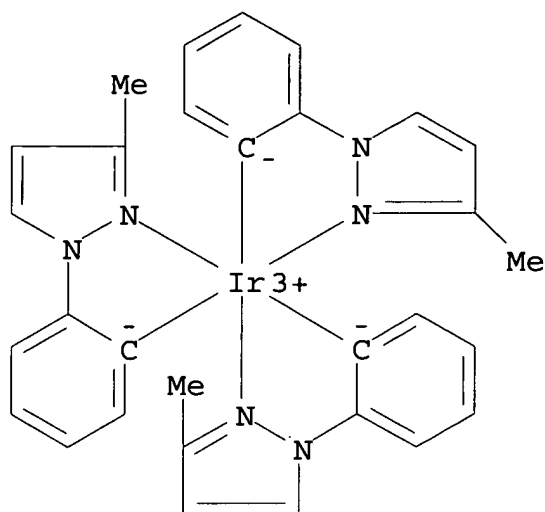
IT 669067-97-4

(electron blocking layer; reorg. **light**

**emitting** devices with electron blocking layers)

RN 669067-97-4 HCAPLUS

CN Iridium, tris[2-(3-methyl-1H-pyrazol-1-yl-κN2)phenyl-κC]- (9CI) (CA INDEX NAME)



IC ICM H05B033-12  
 NCL 428690000; 428917000; 313504000; 313506000; 548103000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 49, 76, 78  
 ST LED electron blocking layer; **light emitting** material electron blocking layer  
 IT **Electroluminescent** devices  
 (organic **light emitting** devices with electron blocking layers)  
 IT 50926-11-9, Indium tin oxide  
 (electrode; organic **light emitting** devices with electron blocking layers)  
 IT **359014-72-5 669067-96-3**  
 (electron blocking layer; organic **light emitting** devices with electron blocking layers)  
 IT **669067-97-4**  
 (electron blocking layer; reorg. **light emitting** devices with electron blocking layers)  
 IT 123847-85-8, NPD  
 (**light emitting** layer; organic **light emitting** devices with electron blocking layers)  
 IT 550378-78-4  
 (mCP; organic **light emitting** devices with electron blocking layers)  
 IT 2085-33-8, Alq3 4733-39-5 7429-90-5, Aluminum, uses 7789-24-4, Lithium fluoride (LiF), uses 58328-31-7, CBP 400654-08-2 488759-65-5  
 (organic **light emitting** devices with electron

blocking layers)

L16 ANSWER 11 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2003:989871 HCAPLUS  
 DOCUMENT NUMBER: 140:50040  
 TITLE: Very low voltage, high efficiency  
**phosphorescent** OLED in a p-i-n  
 structure  
 INVENTOR(S): Forrest, Stephen R.; Pfeiffer, Martin  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
US 2003230980	A1	20031218	US 2002-173682
WO 2003107452	A1	20031224	WO 2003-US19593

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-173682 A



AB Organic **light-emitting** devices are described which comprise an anode disposed over a substrate; a p-doped organic layer disposed over and elec. connected to the anode; a **phosphorescent** organic emissive layer disposed over and elec. connected to the p-doped organic layer; an n-doped organic layer disposed over and elec. connected to the **phosphorescent** organic emissive layer; and a cathode disposed over and elec. connected to the n-doped organic layer, where a blocking layer is disposed between and elec. connected to the p-doped and/or the n-doped organic layer and the emissive layer, the blocking layer adapted to block electrons/holes and excitons from entering the doped organic layer. In addition to the device having a cathode on the

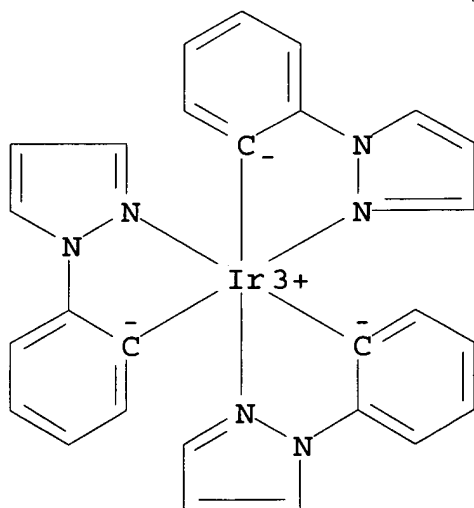
top, an "inverted" device having a cathode on the bottom is also discussed.

IT 359014-72-5

(blocking layer; very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC]- (9CI)  
(CA INDEX NAME)



IC ICM H01L035-24

NCL 313600000; 257040000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 76

ST voltage efficiency **phosphorescent electroluminescent** device PIN OLED

IT Semiconductor materials  
(intrinsic, emissive layer; very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

IT **Electroluminescent** devices  
(**phosphorescent**; very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure)

IT P-I-N diodes  
(very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure)

IT **Fluorescent** substances  
**Phosphorescent** substances  
(very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

IT 4733-39-5, BCP  
(BCP; very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

IT 29261-33-4, F4-TCNQ  
(F4-TCNQ, dopant; very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

IT 123847-85-8, NPD  
(NPD; very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

IT 1662-01-7, Bathophenanthroline **359014-72-5**  
(blocking layer; very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

IT 7439-93-2, Lithium, properties 94928-86-6, Tris(2-phenylpyridine)iridium  
(dopant; very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

IT 7429-90-5, Aluminum, uses 7789-24-4, Lithium fluoride LiF, uses 50926-11-9, Indium tin oxide  
(very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

IT 147-14-8, Copper phthalocyanine 2085-33-8, Aluminum tris(8-hydroxyquinolinato) 58328-31-7, CBP 124729-98-2 150405-69-9, TAZ  
(very low voltage, high efficiency **phosphorescent** OLED in p-i-n structure containing)

L16 ANSWER 12 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2003:861940 HCAPLUS  
 DOCUMENT NUMBER: 141:164405  
 TITLE: New charge-carrier blocking materials for high efficiency OLEDs

AUTHOR(S): Adamovich, Vadim I.; Cordero, Steven R.;  
Djurovich, Peter I.; Tamayo, Arnold;  
Thompson, Mark E.; D'Andrade, Brian W.; Forrest,  
Stephen R.  
CORPORATE SOURCE: Department of Chemistry, University of  
Southern California, Los Angeles, CA, 90089,  
USA  
SOURCE: Organic Electronics (2003), 4(2-3), 77-87  
CODEN: OERLAU; ISSN: 1566-1199  
PUBLISHER: Elsevier Science B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Three strategies for preparing high efficiency **OLEDs** are demonstrated, which involve the use of hole and electron blocking layers. The 1st of these strategies involves the use of a cyclometalated Ir compound (bis(2-(4,6-difluorophenyl)pyridyl-N,C2')iridium(III) picolinate, FIrpic) as a hole-blocking material for green and blue emissive **OLEDs**. Devices which used FIrpic as a combined hole blocking and electron transporting layer gave external quantum efficiencies > 14% (device structure: anode/HTL/EL/FIrpic/cathode, HTL = hole transport layer, EL = emissive layer). When the FIrpic layer of this device was replaced with bathocuproine (BCP), the device efficiency dropped to 12%. A host-guest approach to the formation of a hole blocking layer (HBL) also was demonstrated. FIrpic was doped into two different wide energy band-gap organic matrix materials (i.e. octaphenyl-cyclooctatetraene, OPCOT, and 1,3,5-tris-phenyl-2-(4-biphenyl)benzene, SC5) forming a mixed HBL. Devices with doped OPCOT gave quantum efficiencies comparable to those with a BCP HBL, while the SC5 based devices gave higher efficiency than their BCP blocked counterparts. When blue electrophosphorescent devices were prepared in a conventional **OLED** structure (i.e. anode/HTL/EL/HBL/ETL/cathode), excessive HTL emission is often observed, resulting from electron leakage from the doped CBP layer into the HTL. This electron leakage can be eliminated by inserting an electron blocking layer (EBL) between the HTL and **luminescent** layers. Both fac-tris(1-phenylpyrazolato,N,C2')iridium(III) (Irppz) and Ir(III) bis(1-phenylpyrazolato,N,C2')(2,2,6,6-tetramethyl-3,5-

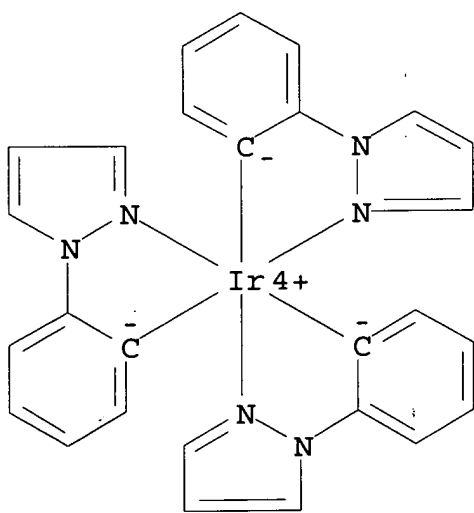
heptanedionato-0,0) were used as efficient EBLs. The insertion of an EBL leads to both improved color purity and quantum efficiency, relative to devices without EBLs. For example, a white **emitting** device with the structure ITO/HTL/EL/HBL/ETL/LiF/Al gave an external efficiency of 1.9% and nearly exclusively HTL emission. Addition of a 100 Å Irppz layer between the HTL and EL gave a device with an external quantum efficiency of 3.3% and **electroluminescence** from only the EL.

IT 562824-31-1 669067-96-3

(new charge-carrier blocking materials for high efficiency OLEDs)

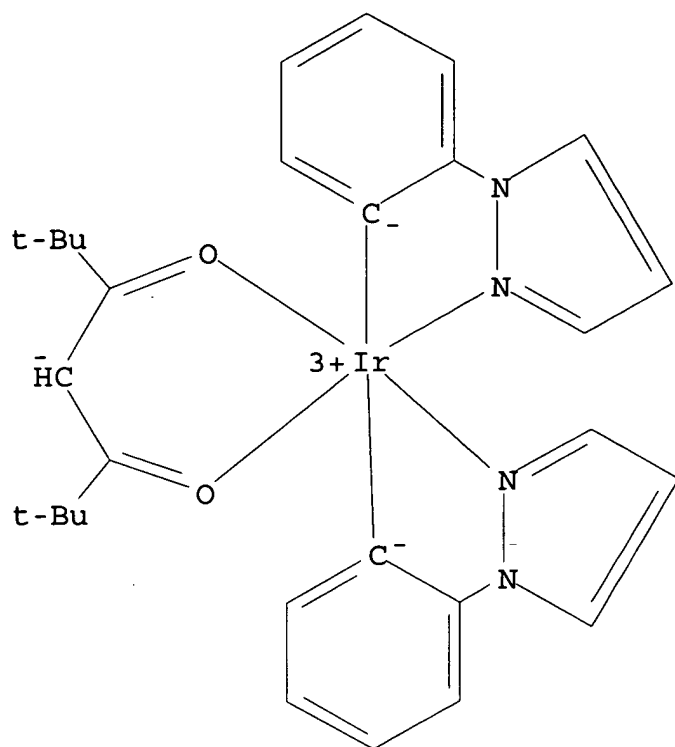
RN 562824-31-1 HCAPLUS

CN Iridium(1+), tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC]-, (OC-6-21)- (9CI) (CA INDEX NAME)



RN 669067-96-3 HCAPLUS

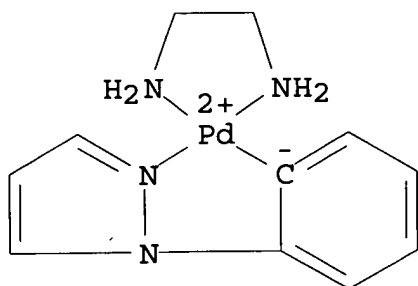
CN Iridium, bis[2-(1H-pyrazol-1-yl-κN2)phenyl-κC] (2,2,6,6-tetramethyl-3,5-heptanedionato-κO,κO') - (9CI) (CA INDEX NAME)



- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 22
- ST charge carrier blocking iridium complex OLED **light emitting diode**
- IT Band structure  
Glass substrates  
Leakage current  
**Luminescence**  
**Luminescence, electroluminescence**  
(new charge-carrier blocking materials for high efficiency OLEDs)
- IT **Electroluminescent devices**  
(organic; new charge-carrier blocking materials for high efficiency OLEDs)
- IT 2041-08-9, Octaphenyl-cyclooctatetraene 2085-33-8, Aluminum tris(8-hydroxyquinolino) 4733-39-5, Bathocuproine 97388-42-6  
123847-85-8, NPD 376367-93-0 400654-08-2 475589-03-8  
**562824-31-1 669067-96-3**  
(new charge-carrier blocking materials for high efficiency OLEDs)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS  
AVAILABLE  
IN THE RE FORMAT

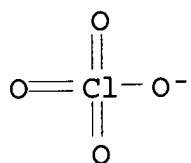
L16 ANSWER 13 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2003:843371 HCAPLUS  
DOCUMENT NUMBER: 141:71680  
TITLE: Effect of the Nature of Heterocyclic Ligands  
on Spectral and **Luminescent**  
Properties of Pt(II) and Pd(II) Complexes  
AUTHOR(S): Puzyk, M. V.; Ivanov, M. A.; Balashev, K. P.  
CORPORATE SOURCE: Herzen State Pedagogical University, St.  
Petersburg, 191186, Russia  
SOURCE: Optics and Spectroscopy (Translation of  
Optika  
i Spektroskopiya) (2003), 95(4), 581-584  
CODEN: OPSUA3; ISSN: 0030-400X  
PUBLISHER: MAIK Nauka/Interperiodica Publishing  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB The spectral and **luminescent** properties of Pt(II) and  
Pd(II) complexes with heterocyclic imine ligands  
(1-phenylpyrazolate, 2-phenylpyridinate, and 2,2'-bipyridyl) were  
studied. The field strength of these ligands satisfies the  
following relation: Ppy- > Bipy ≈ Ppz-. The prepns. of  
[Pd(en)(Ppz)]ClO4 and [Pd(en)(Bpy)](ClO4)2 are described.  
IT **709654-53-5P**  
(effect of heterocyclic ligands on spectral and  
**luminescent** properties of platinum and palladium  
divalent complexes and preparation of palladium  
ethylenediamine  
phenylpyrazolato and bipyridyl complexes)  
RN 709654-53-5 HCAPLUS  
CN Palladium(1+), (1,2-ethanediamine-κN,κN') [2-(1H-  
pyrazol-1-yl-κN2)phenyl-κC]-, (SP-4-2)-, perchlorate  
(9CI) (CA INDEX NAME)  
CM 1  
CRN 709654-52-4  
CMF C11 H15 N4 Pd  
CCI CCS



CM 2

CRN 14797-73-0

CMF Cl 04



- CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 22, 73
- ST palladium platinum phenylpyrazolate phenylpyridinate bipyridyl  
 complex **luminescence** UV spectra; ethylenediamine  
 palladium phenylpyrazolato bipyridyl complex prepn UV spectra  
**luminescence**
- IT Excited electronic state  
**Luminescence**  
 UV and visible spectra  
 (effect of heterocyclic ligands on spectral and  
**luminescent** properties of platinum and palladium  
 divalent complexes and preparation of palladium  
 ethylenediamine  
 phenylpyrazolato and bipyridyl complexes)
- IT Ligand field theory  
 (spectrochem. series; effect of heterocyclic ligands on  
 spectral and **luminescent** properties of platinum and  
 palladium divalent complexes and preparation of palladium  
 ethylenediamine phenylpyrazolato and bipyridyl complexes)
- IT 22427-61-8, Bis(2,2'-bipyridine)platinum(2+) 24972-61-0,  
 (2,2'-Bipyridine) (ethylenediamine)platinum(2+) 117939-95-4,

(Ethylenediamine) [2-(pyridin-2-yl)phenyl]palladium(1+)  
164533-54-4,  
(Ethylenediamine) [2-(pyridin-2-yl)phenyl]platinum(1+)  
perchlorate  
(effect of heterocyclic ligands on spectral and  
**luminescent** properties of platinum and palladium  
divalent complexes and preparation of palladium  
ethylenediamine  
phenylpyrazolato and bipyridyl complexes)  
IT 187456-51-5P, (2,2'-Bipyridine)(ethylenediamine)palladium(2+)  
diperchlorate **709654-53-5P**  
(effect of heterocyclic ligands on spectral and  
**luminescent** properties of platinum and palladium  
divalent complexes and preparation of palladium  
ethylenediamine  
phenylpyrazolato and bipyridyl complexes)  
IT 107-15-3, Ethylenediamine, reactions 31405-81-9,  
Bis(tetrabutylammonium) tetrachloropalladate  
(effect of heterocyclic ligands on spectral and  
**luminescent** properties of platinum and palladium  
divalent complexes and preparation of palladium  
ethylenediamine  
phenylpyrazolato and bipyridyl complexes)  
IT 1008-89-5, 2-Phenylpyridine 1126-00-7, 1-Phenylpyrazole  
(reference; effect of heterocyclic ligands on spectral and  
**luminescent** properties of platinum and palladium  
divalent complexes and preparation of palladium  
ethylenediamine  
phenylpyrazolato and bipyridyl complexes)  
IT 366-18-7, 2,2'-Bipyridine  
(reference; effect of heterocyclic ligands on spectral and  
**luminescent** properties of platinum and palladium  
divalent complexes and preparation of palladium  
ethylenediamine  
phenylpyrazolato and bipyridyl complexes)  
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS  
AVAILABLE  
IN THE RE FORMAT  
  
L16 ANSWER 14 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2003:814404 HCAPLUS  
DOCUMENT NUMBER: 140:27914  
TITLE: New **Luminescent** Cyclometalated  
Iridium(III) Diimine Complexes as Biological  
Labeling Reagents  
AUTHOR(S): Lo, Kenneth Kam-Wing; Chung, Chi-Keung; Lee,



CORPORATE SOURCE: Terence Kwok-Ming; Lui, Lok-Hei; Tsang, Keith Hing-Kit; Zhu, Nianrong  
Department of Biology and Chemistry, City University of Hong Kong, Kowloon, Hong Kong, Peop. Rep. China  
SOURCE: Inorganic Chemistry (2003), 42(21), 6886-6897  
CODEN: INOCAJ; ISSN: 0020-1669  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 140:27914

AB The synthesis, characterization, and photophys. and electrochem. properties of thirty **luminescent** cyclometalated iridium(III) diimine complexes  $[\text{Ir}(\text{N-C})_2(\text{N-N})](\text{PF}_6)$  (HN-C = 2-phenylpyridine, Hppy; 2-(4-methylphenyl)pyridine, Hmppy; 3-methyl-1-phenylpyrazole, Hmppz; 7,8-benzoquinoline, Hbzq; 2-phenylquinoline, Hpq; N-N = 4-amino-2,2'-bipyridine, bpy-NH<sub>2</sub>; 4-isothiocyanato-2,2'-bipyridine, bpy-ITC; 4-iodoacetamido-2,2'-bipyridine, bpy-IAA; 5-amino-1,10-phenanthroline, phen-NH<sub>2</sub>; 5-isothiocyanato-1,10-phenanthroline, phen-ITC; 5-iodoacetamido-1,10-phenanthroline, phen-IAA) were reported.

The x-ray crystal structure of  $[\text{Ir}(\text{mppz})_2(\text{bpy-NH}_2)](\text{PF}_6)$  has also been investigated. Upon irradiation, all the complexes display intense and long-lived **luminescence** under ambient conditions and in 77-K glass. On the basis of the photophys. and electrochem. data, the emission of most of these complexes is assigned to an excited state of predominantly triplet metal-to-ligand charge-transfer (3MLCT) ( $d\pi(\text{Ir}) \rightarrow \pi^*(\text{N-N})$ ) character. In some cases, triplet intraligand (3IL) ( $\pi \rightarrow \pi^*$ ) (N-N or N-C-) excited states have also been identified. In view of the specific reactivity of the isothiocyanate and iodoacetamide moieties toward the primary amine and sulfhydryl groups, resp., several complexes were labeled various biol. mols. with a selection of **luminescent** iridium(III) complexes. The photophys. properties of the **luminescent** conjugates have been investigated. In addition, a heterogeneous assay for digoxin has also been designed on the basis of the recognition of biotinylated anti-digoxin by avidin labeled with one of the **luminescent** iridium(III) complexes.

IT 631921-38-5P

(crystal structure; preparation, electrochem. properties, and characterization of new **luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

RN 631921-38-5 HCAPLUS

CN Iridium(1+), ([2,2'-bipyridin]-4-amine- $\kappa$ N1, $\kappa$ N1')bis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]-, (OC-6-13)-, hexafluorophosphate(1-), compd. with dichloromethane (1:1), monohydrate (9CI) (CA INDEX NAME)

CM 1

CRN 75-09-2

CMF C H2 Cl2

Cl-CH<sub>2</sub>-Cl

CM 2

CRN 631920-92-8

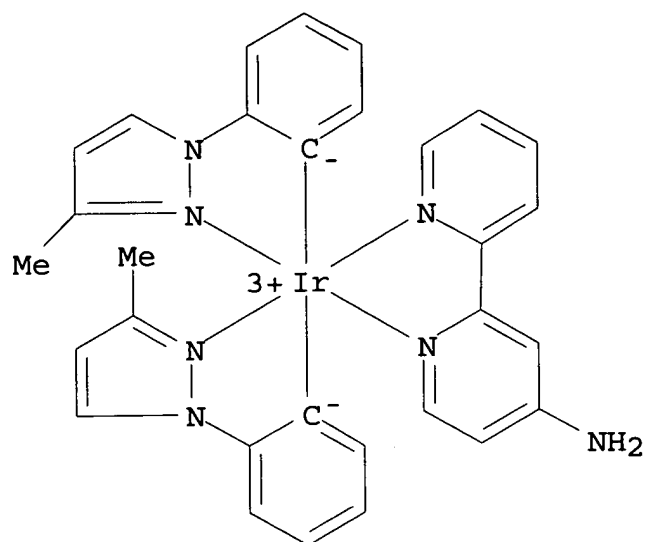
CMF C30 H27 Ir N7 . F6 P

CM 3

CRN 631920-91-7

CMF C30 H27 Ir N7

CCI CCS

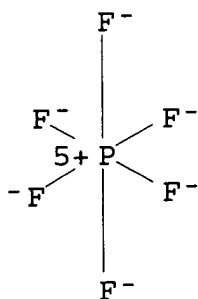


CM 4

CRN 16919-18-9

CMF F6 P

CCI CCS



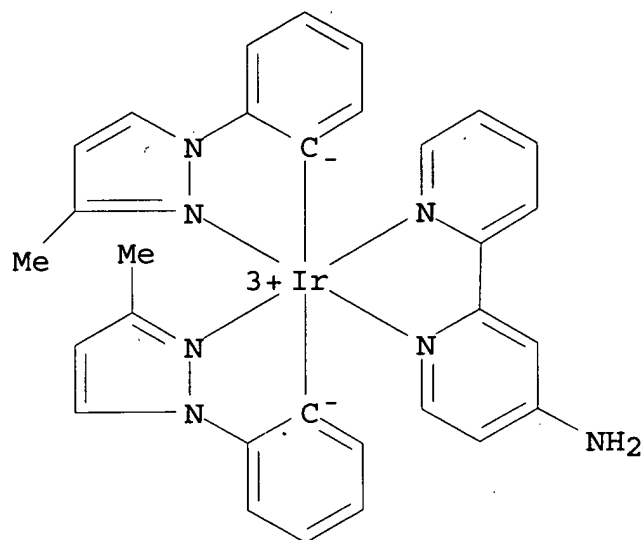
IT 631920-92-8P  
(mol. structure; preparation, electrochem. properties, and characterization of new **luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

RN 631920-92-8 HCAPLUS

CN Iridium(1+), ([2,2'-bipyridin]-4-amine-κN1,κN1')bis[2-(3-methyl-1H-pyrazol-1-yl-κN2)phenyl-κC]-, (OC-6-13)-, hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

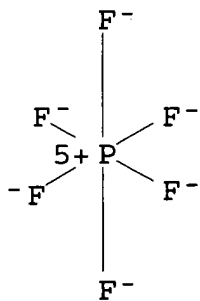
CM 1

CRN 631920-91-7  
 CMF C30 H27 Ir N7  
 CCI CCS



CM 2

CRN 16919-18-9  
 CMF F6 P  
 CCI CCS



IT 631921-16-9P 631921-20-5P  
 (preparation, electrochem. properties, and characterization  
 of new

**luminescent** cyclometalated iridium diimine complexes as  
biol. labeling reagents)

RN 631921-16-9 HCAPLUS

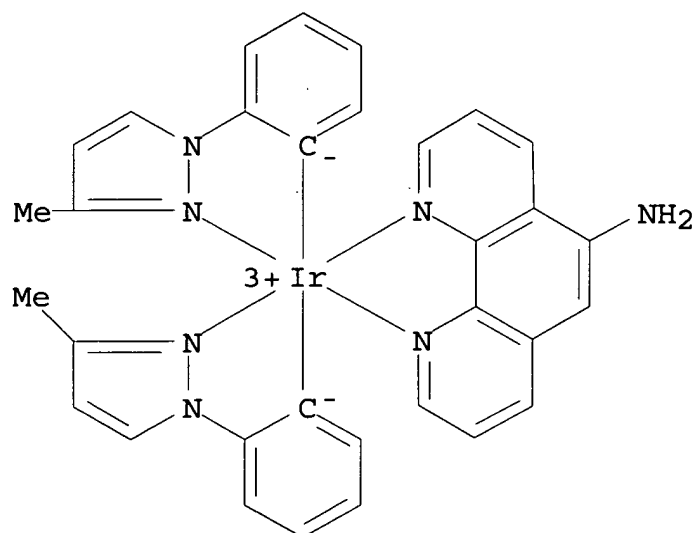
CN Iridium(1+), bis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C] (1,10-phenanthroline-5-amine- $\kappa$ N1, $\kappa$ N10)-,  
hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 631921-15-8

CMF C32 H27 Ir N7

CCI CCS

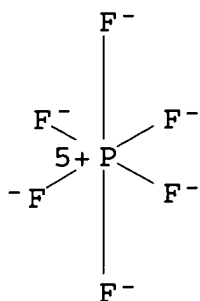


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



RN 631921-20-5 HCAPLUS

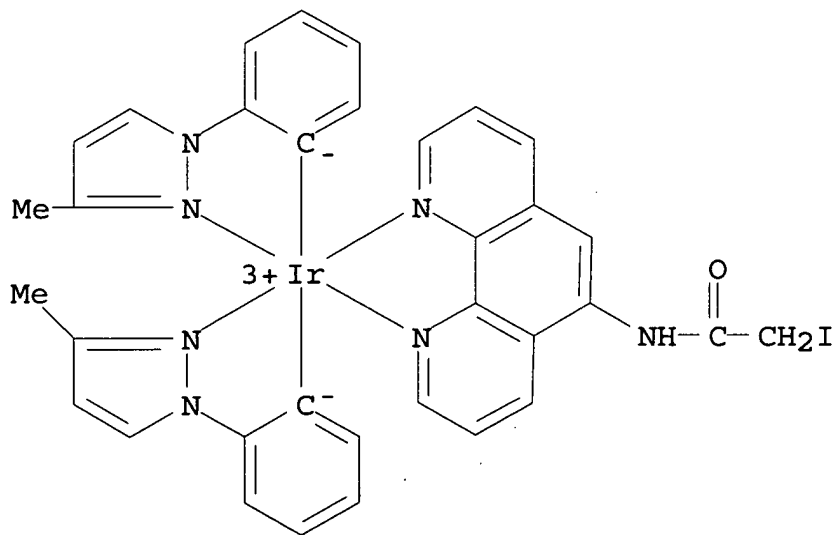
CN Iridium(1+), [2-iodo-N-(1,10-phenanthrolin-5-yl- $\kappa$ N1, $\kappa$ N10)acetamide]bis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]-, hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 631921-19-2

CMF C34 H28 I Ir N7 O

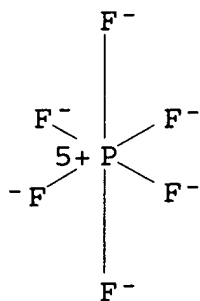
CCI CCS



CM 2

CRN 16919-18-9

CMF F6 P  
CCI CCS



IT 631920-94-0P 631920-96-2P 631921-18-1P  
(preparation, electrochem. properties, and characterization  
of new

**luminescent** cyclometalated iridium diimine complexes as  
biol. labeling reagents)

RN 631920-94-0 HCAPLUS

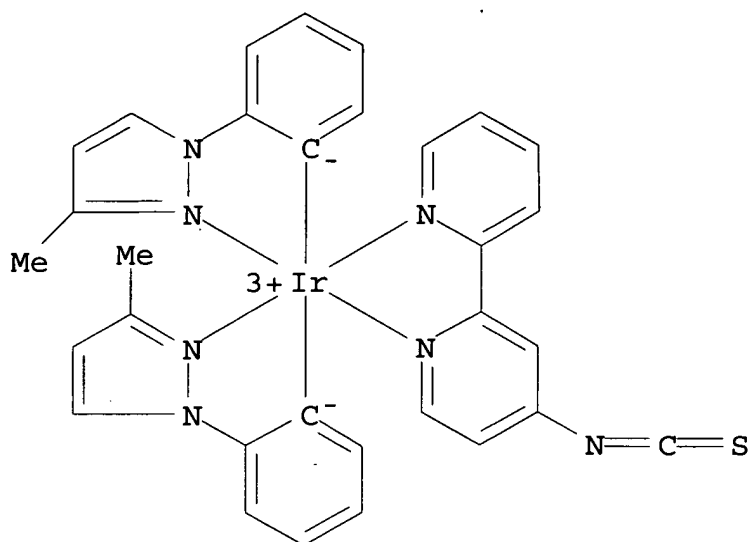
CN Iridium(1+), (4-isothiocyanato-2,2'-bipyridine-  
 $\kappa$ N1, $\kappa$ N1')bis[2-(3-methyl-1H-pyrazol-1-yl-  
 $\kappa$ N2)phenyl- $\kappa$ C]-, hexafluorophosphate(1-) (9CI) (CA  
INDEX NAME)

CM 1

CRN 631920-93-9

CMF C31 H25 Ir N7 S

CCI CCS

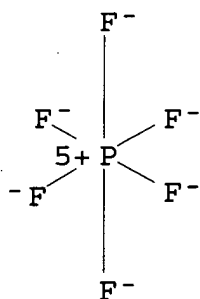


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



RN 631920-96-2 HCAPLUS

CN Iridium(1+), [N-([2,2'-bipyridin]-4-yl- $\kappa$ N1, $\kappa$ N1')-2-iodoacetamide]bis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]-, hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

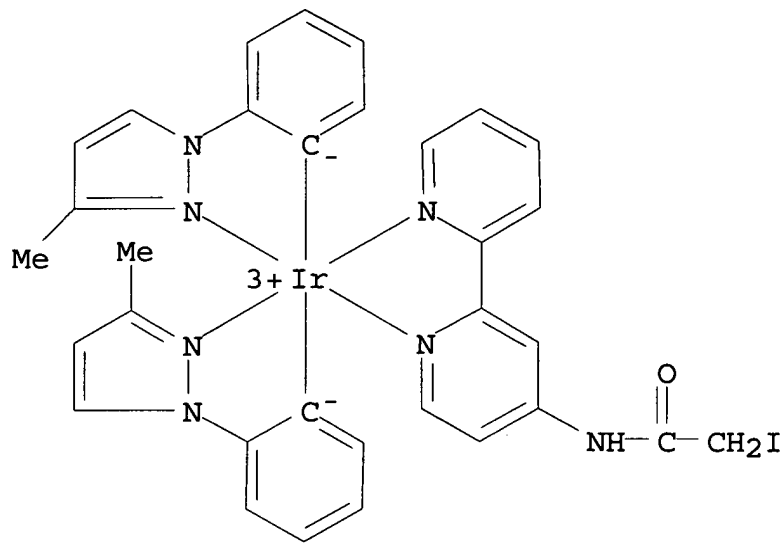
CM 1

CRN 631920-95-1

CMF C32 H28 I Ir N7 O



CCI CCS

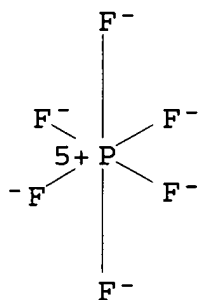


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS

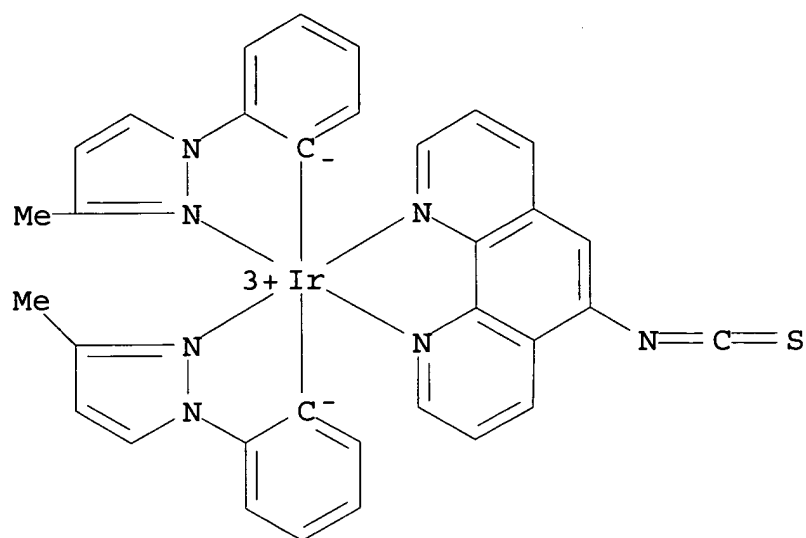


RN 631921-18-1 HCAPLUS

CN Iridium(1+), (5-isothiocyanato-1,10-phenanthroline-  
 $\kappa$ N1, $\kappa$ N10)bis[2-(3-methyl-1H-pyrazol-1-yl-  
 $\kappa$ N2)phenyl- $\kappa$ C]-, hexafluorophosphate(1-) (9CI) (CA  
 INDEX NAME)

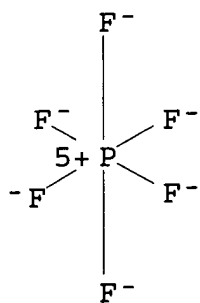
CM 1

CRN 631921-17-0  
 CMF C33 H25 Ir N7 S  
 CCI CCS



CM 2

CRN 16919-18-9  
 CMF F6 P  
 CCI CCS



IT 631921-34-1P 631921-36-3P  
 (preparation, electrochem. properties, and characterization  
 of new  
 luminescent cyclometalated iridium diimine complexes as

biol. labeling reagents)

RN 631921-34-1 HCAPLUS

CN Iridate(4-), [L- $\gamma$ -glutamyl-S-[2-oxo-2-[(1,10-phenanthrolin-5-yl- $\kappa$ N1, $\kappa$ N10)amino]ethyl]-L-cysteinyglycinato(2-)]bis[2-(3-methyl-1H-pyrazol-1-yl)phenyl- $\kappa$ C]-, hydrogen hexafluorophosphate(1-) (1:2:1) (9CI) (CA INDEX NAME)

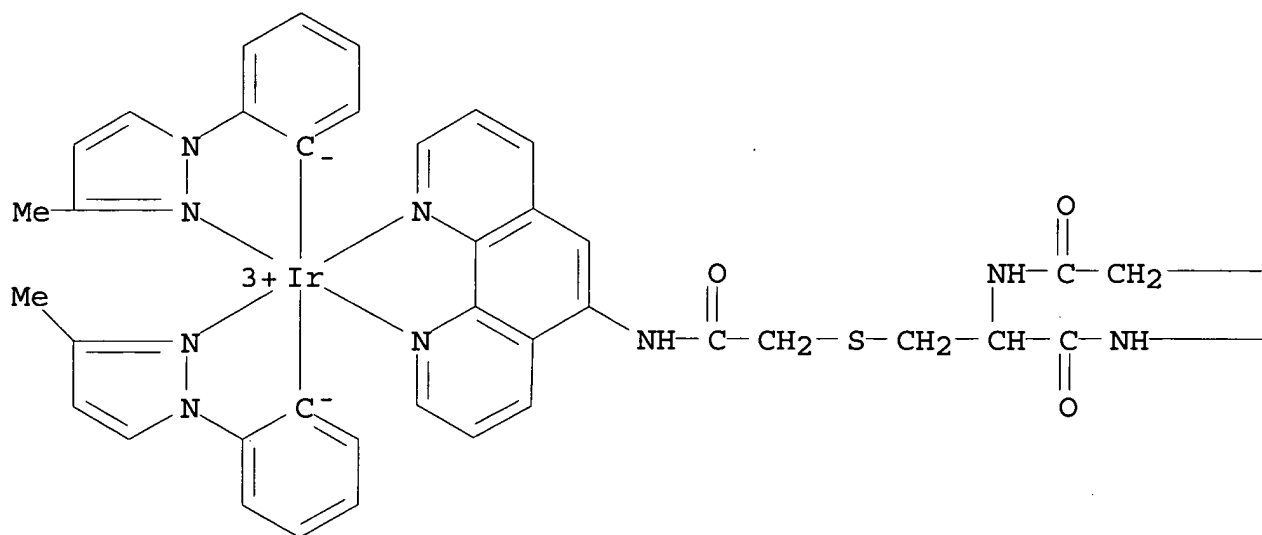
CM 1

CRN 631921-33-0

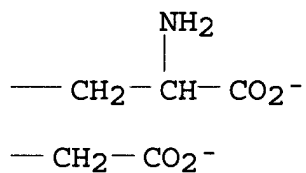
CMF C44 H42 Ir N10 O7 S

CCI CCS

PAGE 1-A



PAGE 1-B

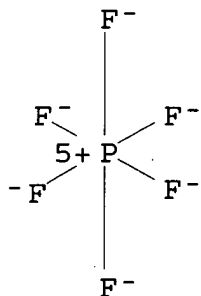


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



RN 631921-36-3 HCAPLUS

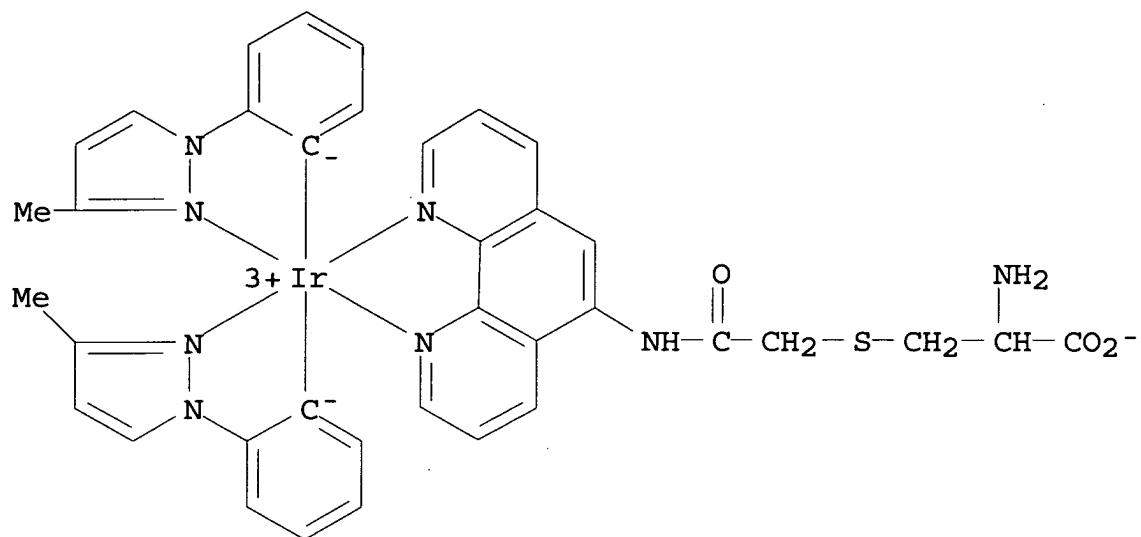
CN Iridium, bis[2-(3-methyl-1H-pyrazol-1-yl-κN2)phenyl-κC] [S-[2-oxo-2-[(1,10-phenanthrolin-5-yl-κN1,κN10)amino]ethyl]-L-cysteinato(2-)]-, mono[hexafluorophosphate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 631921-35-2

CMF C37 H33 Ir N8 O3 S

CCI CCS

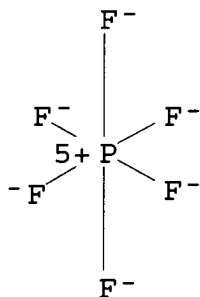


CM 2

CRN 16940-81-1

CMF F6 P . H

CCI CCS

● H<sup>+</sup>

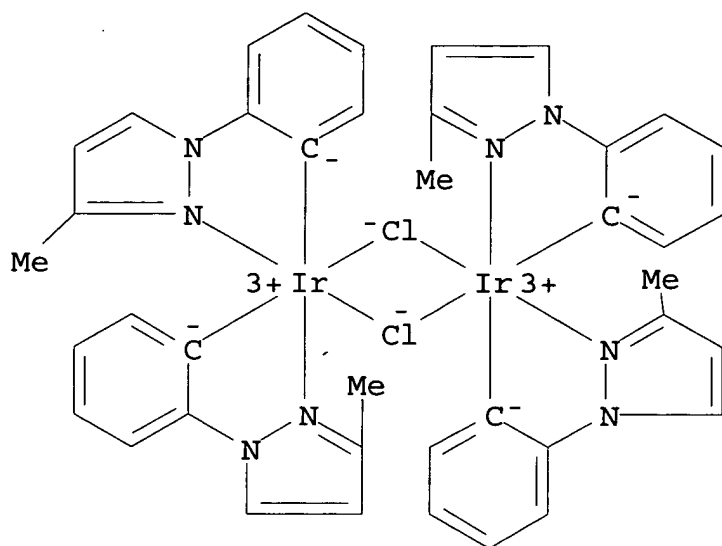
IT 631921-37-4

(preparation, electrochem. properties, and characterization  
of new

**luminescent** cyclometalated iridium diimine complexes as  
biol. labeling reagents)

RN 631921-37-4 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(3-methyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 6, 72, 75

ST **luminescent** cyclometalated iridium diimine complex prepn  
biol labeling reagent; electrochem redox reaction cyclometalated  
iridium diimine complex; crystal mol structure cyclometalated  
iridium methylphenylpyrazole aminobipyridine complex

IT Avidins

(conjugates; preparation, electrochem. properties, and  
characterization of new **luminescent** cyclometalated  
iridium diimine complexes as biol. labeling reagents)

IT Redox reaction

(electrochem.; preparation, electrochem. properties, and  
characterization of new **luminescent** cyclometalated  
iridium diimine complexes as biol. labeling reagents)

IT Biotinylation

Charge transfer interaction

Emission spectra

Labels

**Luminescence**

UV and visible spectra

(preparation, electrochem. properties, and characterization  
of new

**luminescent** cyclometalated iridium diimine complexes as  
biol. labeling reagents)

IT Albumins, preparation

(serum, human, conjugates; preparation, electrochem. properties, and

characterization of new **luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

IT 631921-38-5P

(crystal structure; preparation, electrochem. properties, and characterization of new **luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

IT 631920-92-8P

(mol. structure; preparation, electrochem. properties, and characterization of new **luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

IT 631920-82-6P

(preparation, electrochem. properties, and characterization of new

**luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

IT 383413-25-0P 383413-32-9P 631920-80-4P 631920-86-0P

631920-98-4P 631921-04-5P 631921-06-7P 631921-10-3P

631921-16-9P 631921-20-5P 631921-22-7P

631921-28-3P

(preparation, electrochem. properties, and characterization of new

**luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

IT 383413-27-2P 631920-84-8P 631920-88-2P 631920-90-6P

631920-94-0P 631920-96-2P 631921-00-1P

631921-02-3P 631921-08-9P 631921-12-5P 631921-14-7P

631921-18-1P 631921-24-9P 631921-26-1P 631921-30-7P

631921-32-9P

(preparation, electrochem. properties, and characterization of new

**luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

IT 631921-34-1P 631921-36-3P

(preparation, electrochem. properties, and characterization of new

**luminescent** cyclometalated iridium diimine complexes as biol. labeling reagents)

IT 52-90-4, Cysteine, reactions 70-18-8, Glutathione, reactions  
14151-21-4, [2,2'-Bipyridin]-4-amine 38020-81-4 54258-41-2,  
1,10-Phenanthroline-5-amine 54907-61-8, Iodoacetic anhydride  
603109-48-4 631921-37-4 632327-35-6 632327-36-7  
632327-37-8

(preparation, electrochem. properties, and characterization of new

**luminescent** cyclometalated iridium diimine complexes as

biol. labeling reagents)

REFERENCE COUNT: 85 THERE ARE 85 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS  
AVAILABLE

IN THE RE FORMAT

L16 ANSWER 15 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:737213 HCAPLUS

DOCUMENT NUMBER: 139:267722

TITLE: White light emitting OLEDs

with combined monomer and aggregate emission  
INVENTOR(S): Thompson, Mark E.; Brooks, Jason; Adamovich,  
Vadim; Forrest, Stephen R.; D'Andrade, Brian

PATENT ASSIGNEE(S): The Trustees of Princeton University, USA

SOURCE: U.S. Pat. Appl. Publ., 40 pp., Cont.-in-part  
of U.S. Ser. No. 112,257.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE			
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US 2003175553	A1	20030918	US 2002-328914
2002			
1224			
US 6863997	B2	20050308	
US 2003124381	A1	20030703	US 2002-112257
2002			
0329			
US 6869695	B2	20050322	
US 2004048101	A1	20040311	US 2003-402684
2003			
0328			
PRIORITY APPLN. INFO.:		US 2001-344133P	P
2001			
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US 2002-112257 A2

2002

0329

US 2002-368496P P

2002

0329

US 2002-328914 A2

2002

1224

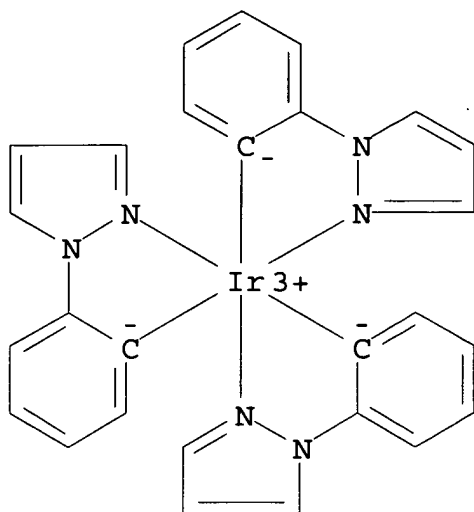
AB Organic **light-emitting** devices are described which include an emissive layer comprising an aggregate **emitter**, and a monomer **emitter** where the emission from the aggregate **emitter** is lower in energy than the emission from the monomer **emitter**, and where the combined emission of the aggregate **emitter** and the monomer **emitter** sufficiently spans the visible spectrum to give a white emission. Organic **light-emitting** devices in which the emissive layer is also a hole-transporting layer or an electron-transporting layer are also discussed, as is a **light** source incorporating the devices.

IT 359014-72-5

(Ir(ppz)<sub>3</sub>, electron-blocking layer; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN<sub>2</sub>)phenyl-κC] - (9CI)  
(CA INDEX NAME)



- IC ICM H05B033-14  
 NCL 428690000; 428917000; 313504000; 313506000; 257102000; 257103000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 76, 78  
 ST white **electroluminescent** device OLED monomer aggregate  
**luminescence light** source  
 IT **Light** sources  
 (incorporating white-light-emitting OLEDs  
 with combined monomer and aggregate emission from  
**emitters** in single emissive region)  
 IT Polymers, uses  
 (matrix of emissive layer; white-light-  
**emitting** OLEDs with combined monomer and aggregate  
 emission from **emitters** in single emissive region)  
 IT **Phosphorescent** substances  
 (organometallic, **emitter**; white-light-  
**emitting** OLEDs with combined monomer and aggregate  
 emission from **emitters** in single emissive region)  
 IT Coordination compounds  
 Organometallic compounds  
 (**phosphorescent emitter**; white-  
**light-emitting** OLEDs with combined monomer  
 and aggregate emission from **emitters** in single  
 emissive region)  
 IT **Electroluminescent** devices  
 (white-emitting, organic; white-light-  
**emitting** OLEDs with combined monomer and aggregate  
 emission from **emitters** in single emissive region)

IT     Aggregates  
       Excimer  
       Exciplex  
         (white-light-emitting OLEDs with combined  
         monomer and aggregate emission from **emitters** in  
         single emissive region)

IT     58328-31-7  
         (CBP, **emitting** host; white-light-  
         **emitting** OLEDs with combined monomer and aggregate  
         emission from **emitters** in single emissive region)

IT     376367-93-0  
         (FIr(pic), electron-blocking layer; white-light-  
         **emitting** OLEDs with combined monomer and aggregate  
         emission from **emitters** in single emissive region)

IT     400654-08-2  
         (FPt, aggregate blue **emitter**, CBP doped with; white-  
         light-emitting OLEDs with combined monomer  
         and aggregate emission from **emitters** in single  
         emissive region)

IT     488759-65-5  
         (FPt2, CBP and mCP doped with; white-light-  
         **emitting** OLEDs with combined monomer and aggregate  
         emission from **emitters** in single emissive region)

IT     562043-95-2  
         (FPt3, CBP and mCP doped with; white-light-  
         **emitting** OLEDs with combined monomer and aggregate  
         emission from **emitters** in single emissive region)

IT     488759-66-6  
         (FPt4, CBP and mCP doped with; white-light-  
         **emitting** OLEDs with combined monomer and aggregate  
         emission from **emitters** in single emissive region)

IT     359014-72-5  
         (Ir(ppz)3, electron-blocking layer; white-light-  
         **emitting** OLEDs with combined monomer and aggregate  
         emission from **emitters** in single emissive region)

IT     150405-69-9, TAZ  
         (light emitting layer; white-light  
         -**emitting** OLEDs with combined monomer and aggregate  
         emission from **emitters** in single emissive region)

IT     550378-78-4  
         (mCP, **emitting** host; white-light-  
         **emitting** OLEDs with combined monomer and aggregate  
         emission from **emitters** in single emissive region)

L16    ANSWER 16 OF 31    HCAPLUS    COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER:        2003:664126    HCAPLUS  
DOCUMENT NUMBER:        139:355837

TITLE: Effects of exciton and charge confinement on the performance of white organic p-i-n electrophosphorescent emissive excimer devices

AUTHOR(S): D'Andrade, Brian W.; Forrest, Stephen R.  
CORPORATE SOURCE: Department of Electrical Engineering, Princeton University, Princeton, NJ, 08544, USA

SOURCE: Journal of Applied Physics (2003), 94(5), 3101-3109

CODEN: JAPIAU; ISSN: 0021-8979

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The quantum efficiency of triplet excimer-based white organic p-i-n

light-emitting devices (WOLEDs) depends exponentially on the thickness of the emissive layer (EML), while the voltage increases approx. linearly with EML thickness. The EML consists of the square planar Pt excimer emitting complex, Pt(II) [2-(4',6'-difluorophenyl-N, C2') (2,4-pentanedionato)] doped into N,N'-dicarbazolyl-3,5-benzene, and the electron capture length within the EML is found to vary from  $90 \pm 10$  to  $120 \pm 10$  Å, depending on whether or not the transport layers are p or n doped. The p-i-n WOLED exhibits peak external quantum and power efficiencies of  $(5.2 \pm 0.5)\%$  and  $(11 \pm 1)$  lm/W, resp., and at 500 cd/m<sup>2</sup> these efficiencies decrease to  $(4.2 \pm 0.4)\%$  and  $(4.3 \pm 0.4)$  lm/W. The device has color coordinates of (0.35, 0.43) and a color rendering index of 75. The authors also demonstrate the importance of an

electron

blocking layer that reduces the leakage of excitons and charge out

of thin EMLs, thereby improving the quantum efficiency of devices by a factor approaching 3, as compared to devices lacking the blocking layer.

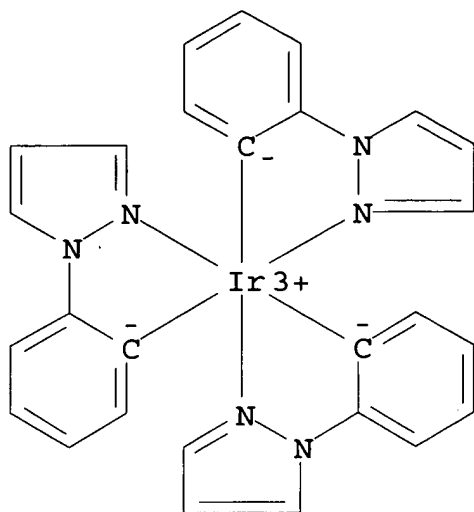
IT 359014-72-5

(effects of exciton and charge confinement on white organic p-i-n

electrophosphorescent emissive excimer devices containing)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC] - (9CI)  
(CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

IT **Electroluminescent** devices

(thin-film; effects of exciton and charge confinement on white organic p-i-n electrophosphorescent emissive excimer devices)

IT 1662-01-7, 4,7-Diphenyl-1,10-phenanthroline 4733-39-5,  
2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 123847-85-8, NPD  
124729-98-2, MTDATA 359014-72-5 400654-08-2  
550378-78-4

(effects of exciton and charge confinement on white organic p-i-n

electrophosphorescent emissive excimer devices containing)

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS

AVAILABLE

IN THE RE FORMAT

L16 ANSWER 17 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:551818 HCAPLUS

DOCUMENT NUMBER: 139:124828

TITLE: White-light-emitting OLEDs  
with combined monomer and aggregate emission  
from **emitters** in single emissive  
region

INVENTOR(S): Thompson, Mark E.; Brooks, Jason; Adamovich,  
Vadim; Forrest, Stephen R.; D'andrade, Brian

PATENT ASSIGNEE(S): The Trustees of Princeton University, USA;  
The

SOURCE: University of Southern California  
PCT Int. Appl., 70 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 4  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE			
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WO 2003059015	A1	20030717	WO 2002-US41578

2002

1226

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC,  
VN, YU, ZA, ZM, ZW  
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
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SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG  
US 2003124381 A1 20030703 US 2002-112257

2002

0329

US 6869695 B2 20050322  
EP 1472908 A1 20041103 EP 2002-806244

2002

1226

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
EE, SK

PRIORITY APPLN. INFO.:

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1228

US 2002-112257 A

2002

0329

US 2002-368496P P

2002

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WO 2002-US41578 W

2002

1226

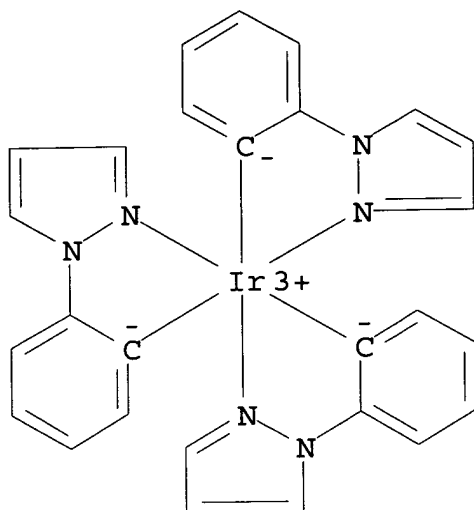
AB Organic **light-emitting** devices are described which include an emissive layer comprising an aggregate **emitter**, and a monomer **emitter** where the emission from the aggregate **emitter** is lower in energy than the emission from the monomer **emitter**, and where the combined emission of the aggregate **emitter** and the monomer **emitter** sufficiently spans the visible spectrum to give a white emission. Organic **light-emitting** devices in which the emissive layer is also a hole-transporting layer or an electron-transporting layer are also discussed, as is a **light** source incorporating the devices.

IT 359014-72-5

(electron-blocking layer; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC] - (9CI)  
(CA INDEX NAME)



- IC ICM H05B033-14  
ICS C09K011-06
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 22, 76, 78
- ST white **electroluminescent** device OLED monomer aggregate  
**luminescence light** source
- IT **Light** sources  
(incorporating white-light-emitting OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)
- IT Polymers, uses  
(matrix of emissive layer; white-light-emitting OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)
- IT **Phosphorescent** substances  
(organometallic, **emitter**; white-light-emitting OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)
- IT Coordination compounds  
Organometallic compounds  
(**phosphorescent emitter**; white-light-emitting OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)
- IT **Electroluminescent** devices  
(white-emitting, organic; white-light-emitting OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)



IT   Aggregates  
     Excimer  
     Exciplex  
      (white-light-emitting OLEDs with combined  
      monomer and aggregate emission from **emitters** in  
      single emissive region)

IT   562043-95-2  
      (CBP and mCP doped with; white-light-emitting  
      OLEDs with combined monomer and aggregate emission from  
      **emitters** in single emissive region)

IT   58328-31-7  
      (CBP, **emitting** host; white-light-  
      **emitting** OLEDs with combined monomer and aggregate  
      emission from **emitters** in single emissive region)

IT   400654-08-2  
      (aggregate **emitter**, CBP doped with; white-  
      light-emitting OLEDs with combined monomer  
      and aggregate emission from **emitters** in single  
      emissive region)

IT   359014-72-5  
      (electron-blocking layer; white-light-  
      **emitting** OLEDs with combined monomer and aggregate  
      emission from **emitters** in single emissive region)

IT   4733-39-5, Bathocuproine  
      (electron-transporting, hole- and exciton-blocking layer;  
      white-light-emitting OLEDs with combined  
      monomer and aggregate emission from **emitters** in  
      single emissive region)

IT   123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl  
      (hole-transporting layer; white-light-  
      **emitting** OLEDs with combined monomer and aggregate  
      emission from **emitters** in single emissive region)

IT   550378-78-4  
      (mCBP, **emitting** host; white-light-  
      **emitting** OLEDs with combined monomer and aggregate  
      emission from **emitters** in single emissive region)

IT   25067-59-8, Poly(9-vinylcarbazole)  
      (matrix in emissive layer; white-light-  
      **emitting** OLEDs with combined monomer and aggregate  
      emission from **emitters** in single emissive region)

IT   400653-92-1  
      (monomer **emitter**, CBP doped with; white-light  
      -emitting OLEDs with combined monomer and aggregate  
      emission from **emitters** in single emissive region)

IT   2085-33-8, Aluminum tris(8-hydroxyquinolino)   155090-83-8  
      (white-light-emitting OLEDs with combined  
      monomer and aggregate emission from **emitters** in

single emissive region)  
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS  
AVAILABLE

IN THE RE FORMAT

L16 ANSWER 18 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2003:511900 HCAPLUS  
DOCUMENT NUMBER: 139:92513  
TITLE: White-light-emitting OLEDs  
from combined monomer and aggregate emission  
INVENTOR(S): Thompson, Mark E.; Brooks, Jason; Adamovich,  
Vadim; Forrest, Stephen R.; D'Andrade, Brian  
PATENT ASSIGNEE(S): The Trustees of Princeton University, USA;  
The  
University of Southern California  
SOURCE: U.S. Pat. Appl. Publ., 31 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 4  
PATENT INFORMATION:

DATE	PATENT NO.	KIND	DATE	APPLICATION NO.
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	US 2003124381	A1	20030703	US 2002-112257
2002				
0329				
	US 6869695	B2	20050322	
	US 2003175553	A1	20030918	US 2002-328914
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	US 6863997	B2	20050308	
	WO 2003059015	A1	20030717	WO 2002-US41578
2002				
1226				
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KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC,  
VN, YU, ZA, ZM, ZW  
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,  
SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG  
EP 1472908                      A1            20041103            EP 2002-806244

2002

1226

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
EE, SK  
US 2004048101                      A1            20040311            US 2003-402684

2003

0328

PRIORITY APPLN. INFO.:

US 2001-344133P            P

2001

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US 2002-112257            A2

2002

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US 2002-368496P            P

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US 2002-328914            A2

2002

1224

WO 2002-US41578            W

2002

1226

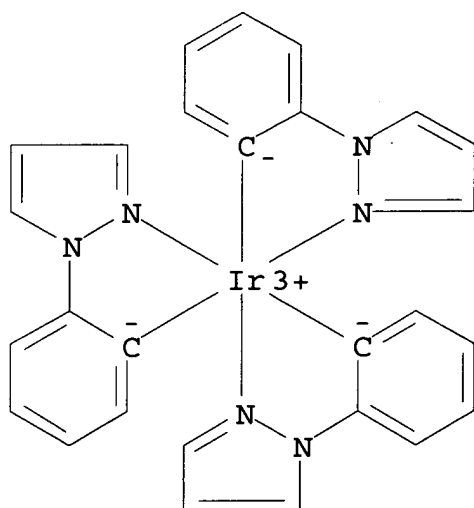
AB Organic **light-emitting** devices are described which include an emissive layer comprising an aggregate **emitter**, and a monomer **emitter** where the emission from the aggregate **emitter** is lower in energy than the emission from the monomer **emitter**, and where the combined emission of the aggregate **emitter** and the monomer **emitter** sufficiently spans the visible spectrum to give a white emission. Organic **light-emitting** devices in which the emissive layer is also a hole-transporting layer or an electron-transporting layer are also discussed, as is a **light** source incorporating the devices.

IT 359014-72-5

(electron-blocking layer; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

RN 359014-72-5 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC]- (9CI)  
(CA INDEX NAME)



IC ICM H05B033-14

NCL 428690000; 428917000; 428212000; 313504000; 313506000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 76, 78

ST white **electroluminescent** device OLED monomer aggregate emission

IT **Light** sources  
(incorporating white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT Polymers, uses  
(matrix of emissive layer; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT **Phosphorescent** substances  
(organometallic, **emitter**; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT Coordination compounds  
Organometallic compounds  
(**phosphorescent emitter**; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT **Electroluminescent** devices  
(white-**emitting**, organic; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT Aggregates  
Excimer  
Exciplex  
(white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT 488759-65-5  
(CBP doped with; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT 58328-31-7  
(CBP, **emitting** host; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT 400654-08-2  
(aggregate **emitter**, CBP doped with; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

IT 359014-72-5  
(electron-blocking layer; white-**light-emitting** OLEDs with combined monomer and aggregate emission from **emitters** in single emissive region)

- IT 4733-39-5, Bathocuproine  
(electron-transporting, hole- and exciton-blocking layer;  
white-light-emitting OLEDs with combined  
monomer and aggregate emission from **emitters** in  
single emissive region)
- IT 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl  
(hole-transporting layer; white-light-  
**emitting** OLEDs with combined monomer and aggregate  
emission from **emitters** in single emissive region)
- IT 25067-59-8, Poly(9-vinylcarbazole)  
(matrix in emissive layer; white-light-  
**emitting** OLEDs with combined monomer and aggregate  
emission from **emitters** in single emissive region)
- IT 400653-92-1  
(monomer **emitter**, CBP doped with; white-light  
-**emitting** OLEDs with combined monomer and aggregate  
emission from **emitters** in single emissive region)
- IT 2085-33-8, Aluminum tris(8-hydroxyquinolino) 155090-83-8  
(white-light-emitting OLEDs with combined  
monomer and aggregate emission from **emitters** in  
single emissive region)

L16 ANSWER 19 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:391359 HCAPLUS

DOCUMENT NUMBER: 139:117521

TITLE: Synthesis and Characterization of Facial and  
Meridional Tris-cyclometalated Iridium(III)  
Complexes

AUTHOR(S): Tamayo, Arnold B.; Alleyne, Bert D.;  
Djurovich, Peter I.; Lamansky, Sergey; Tsyba,  
Irina; Ho, Nam N.; Bau, Robert; Thompson,

Mark

E.

CORPORATE SOURCE: Department of Chemistry, University of  
Southern California, Los Angeles, CA,  
90089-0744, USA

SOURCE: Journal of the American Chemical Society  
(2003), 125(24), 7377-7387  
CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:117521

AB The synthesis, structures, electrochem., and photophysics of  
facial (fac) and meridional (mer) tris-cyclometalated Ir(III)  
complexes are reported. The complexes have the general formula  
Ir(C.cxa.N)<sub>3</sub> [where C.cxa.N is a monoanionic cyclometalating

ligand; 2-phenylpyridyl (ppy), 2-(p-tolyl)pyridyl (tpy), 2-(4,6-difluorophenyl)pyridyl (46dfppy), 1-phenylpyrazolyl (ppz), 1-(4,6-difluorophenyl)pyrazolyl (46dfppz), or 1-(4-trifluoromethylphenyl)pyrazolyl (tfmppz)]. Reaction of the dichloro-bridged dimers  $[(C.cxa.N)_2Ir(\mu-Cl)_2Ir(C.cxa.N)_2]$  with 2 equiv of HC.cxa.N at 140-150° forms the corresponding meridional isomer, while higher reaction temps. give predominantly the facial isomer. Both facial and meridional isomers can be obtained in good yield (>70%). The meridional isomer of  $Ir(tpy)_3$  and facial and meridional isomers of  $Ir(ppz)_3$  and  $Ir(tfmppz)_3$  were structurally characterized using x-ray crystallog. The facial isomers have nearly identical bond lengths (average Ir-C = 2.018 Å, average Ir-N = 2.123 Å) and angles. The three meridional isomers have the expected bond length alternations for the differing trans influences of Ph and pyridyl/pyrazolyl ligands. Bonds that are trans to Ph groups are longer (Ir-C average = 2.071 Å, Ir-N average = 2.031 Å) than when they are trans to heterocyclic groups. The Ir-C and Ir-N bonds with trans N and C, resp., have bond lengths very similar to those observed for the corresponding facial isomers. DFT calcns. of both the singlet (ground) and the triplet states of the compds. suggest that the HOMO levels are a mixture of Ir and ligand orbitals, while the LUMO is predominantly ligand-based. All of the complexes show reversible oxidation between 0.3 and 0.8 V, vs. Fc/Fc+. The meridional isomers are easier to oxidize by .apprx.50-100 mV. The phenylpyridyl-based complexes have reduction potentials between -2.5 and -2.8 V, whereas the phenylpyrazolyl-based complexes exhibit no reduction up to the solvent limit of -3.0 V. All of the compds. have intense absorption bands in the UV region assigned into  $1(\pi \rightarrow \pi^*)$  transitions and weaker MLCT (metal-to-ligand charge transfer) transitions that extend to the visible region. The MLCT transitions of the pyrazolyl-based complexes are hypsochromically shifted relative to those of the pyridyl-based compds. The phenylpyridyl-based  $Ir(III)$  tris-cyclometalates exhibit intense emission both at room temperature and at 77 K, whereas the phenylpyrazolyl-based derivs. emit strongly only at 77 K. The emission energies and lifetimes of the phenylpyridyl-based complexes (450-550 nm, 2-6  $\mu$ s) and

phenylpyrazolyl-based compds. (390-440 nm, 14-33  $\mu$ s) are characteristic for a mixed ligand-centered/MLCT excited state. The meridional isomers for both pyridyl and pyrazolyl-based cyclometalates show markedly different spectroscopic properties than do the facial forms. Isolated samples of mer-Ir(C.cxa.N)<sub>3</sub> complexes can be thermally and photochem. converted to facial forms, indicating that the meridional isomers are kinetically favored products. The lower thermodyn. stabilities of the meridional isomers are likely related to structural features of these complexes; i.e., the meridional configuration places strongly trans influencing Ph groups opposite each other, whereas all three Ph groups are opposite pyridyl or pyrazolyl groups in the facial complexes. The strong trans influence of the Ph

groups

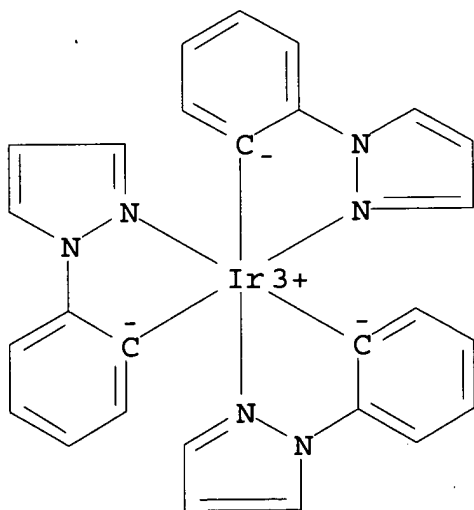
in the meridional isomers leads to the observation that they are easier to oxidize, exhibit broad, red shifted emission, and have lower quantum efficiencies than their facial counterparts.

IT 562824-23-1P 562824-25-3P

(crystal structure, isomerization; preparation, structure, DFT calcns., electrochem. redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)

RN 562824-23-1 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]-, (OC-6-21)- (9CI) (CA INDEX NAME)

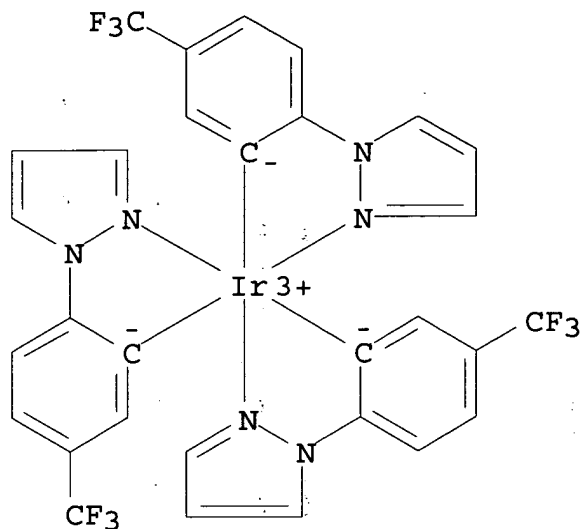


RN 562824-25-3 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl- $\kappa$ N2)-5-(trifluoromethyl)phenyl- $\kappa$ C]-, (OC-6-21)- (9CI) (CA INDEX NAME)



NAME)

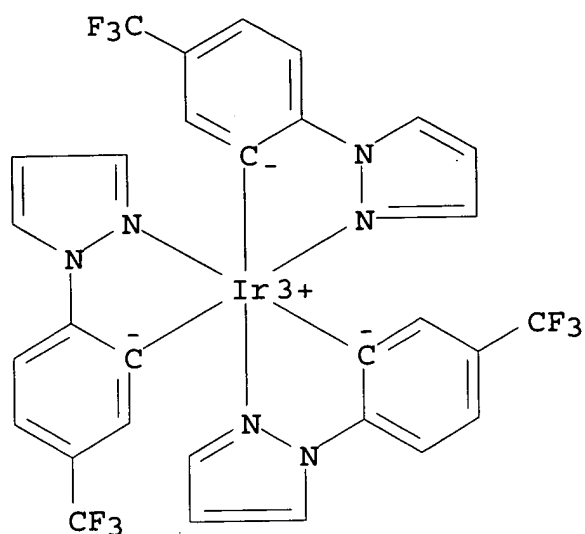


IT 562099-09-6P 562824-20-8P

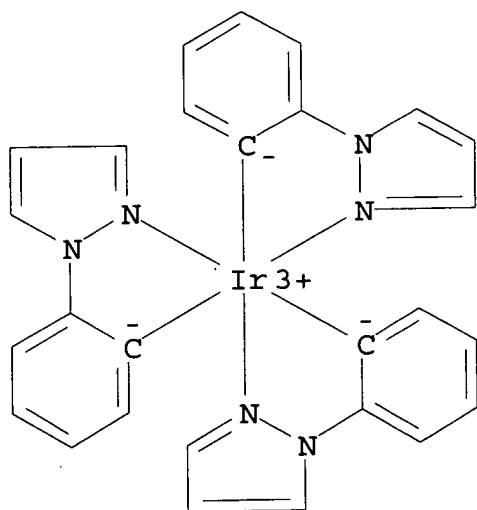
(crystal structure; preparation, structure, DFT calcns., electrochem. redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)

RN 562099-09-6 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)-5-(trifluoromethyl)phenyl-κC]-, (OC-6-22)- (9CI) (CA INDEX NAME)

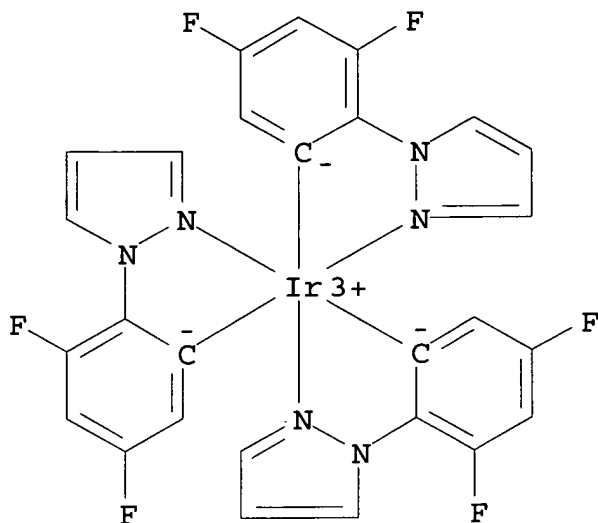


RN 562824-20-8 HCAPLUS  
 CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC]-,  
 (OC-6-22)- (9CI) (CA INDEX NAME)

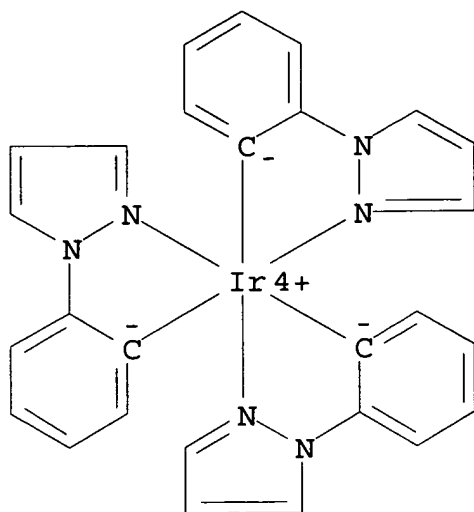


IT 562824-24-2P  
 (isomerization; preparation, structure, DFT calcns.,  
 electrochem.  
 redox and photophysics of facial and meridional  
 tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl  
 complexes)

RN 562824-24-2 HCAPLUS  
 CN Iridium, tris[3,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]-, (OC-6-21)- (9CI) (CA INDEX NAME)

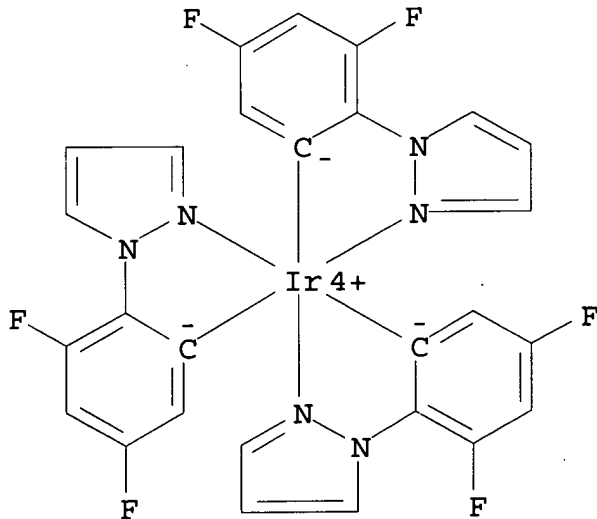


IT 562099-19-8 562099-20-1 562099-22-3  
 562824-31-1 562824-32-2 562824-34-4  
 (preparation, structure, DFT calcns., electrochem. redox and  
 photophysics of facial and meridional tris-cyclometalated  
 iridium phenylpyridyl and phenylpyrazolyl complexes)  
 RN 562099-19-8 HCAPLUS  
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 (OC-6-22)- (9CI) (CA INDEX NAME)



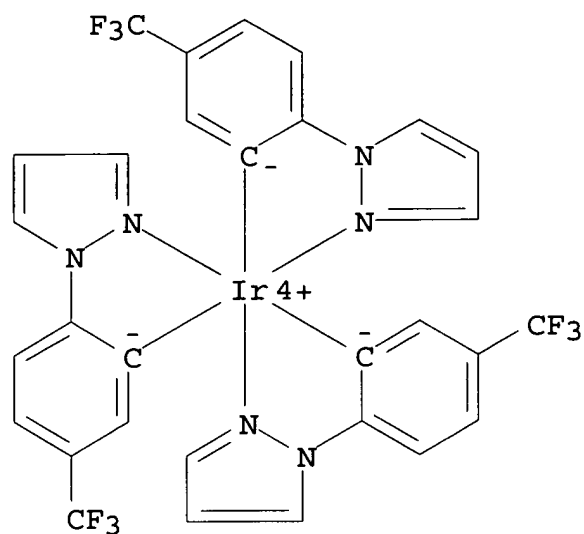
RN 562099-20-1 HCAPLUS

CN Iridium(1+), tris[3,5-difluoro-2-(1H-pyrazol-1-yl-κN2)phenyl-κC]-, (OC-6-22)-(9CI) (CA INDEX NAME)



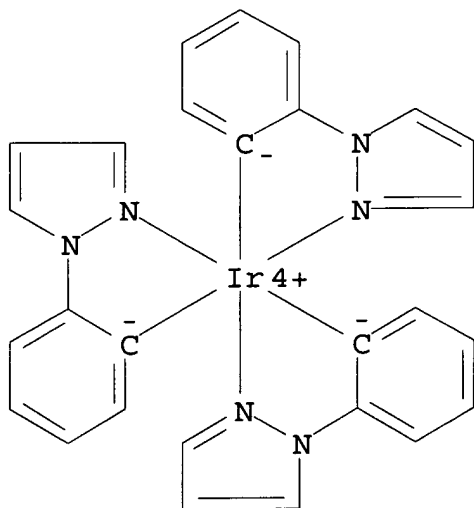
RN 562099-22-3 HCAPLUS

CN Iridium(1+), tris[2-(1H-pyrazol-1-yl-κN2)-5-(trifluoromethyl)phenyl-κC]-, (OC-6-22)-(9CI) (CA INDEX NAME)



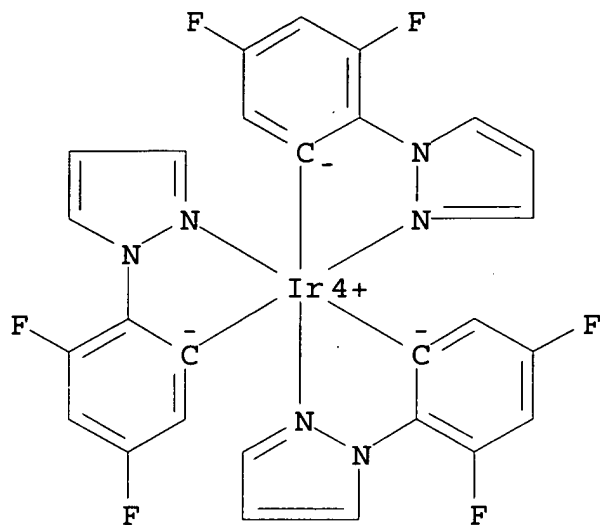
RN 562824-31-1 HCAPLUS

CN Iridium(1+), tris[2-(1H-pyrazol-1-yl-κN2)phenyl-κC]-, (OC-6-21)- (9CI) (CA INDEX NAME)



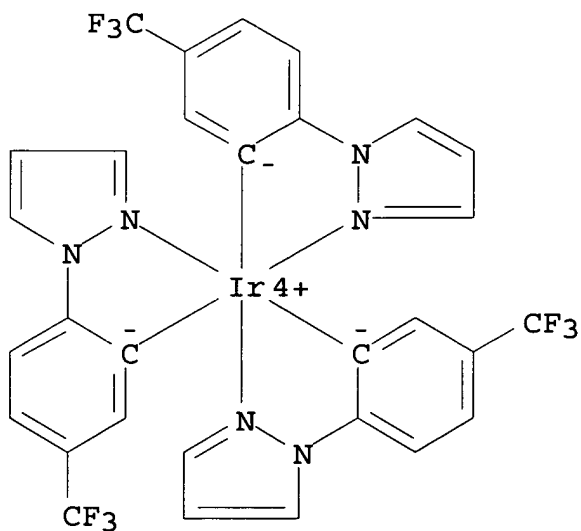
RN 562824-32-2 HCAPLUS

CN Iridium(1+), tris[3,5-difluoro-2-(1H-pyrazol-1-yl-κN2)phenyl-κC]-, (OC-6-21)- (9CI) (CA INDEX NAME)



RN 562824-34-4 HCAPLUS

CN Iridium(1+), tris[2-(1H-pyrazol-1-yl-κN2)-5-(trifluoromethyl)phenyl-κC]-, (OC-6-21)- (9CI) (CA INDEX NAME)

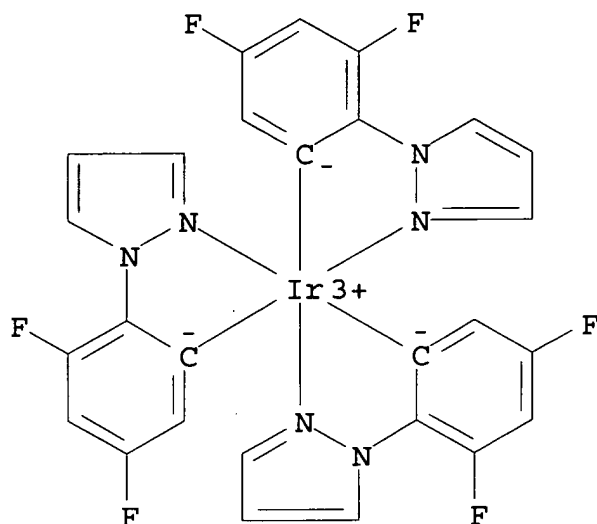


IT 562099-08-5P

(preparation, structure, DFT calcns., electrochem. redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)

RN 562099-08-5 HCAPLUS

CN Iridium, tris[3,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]-, (OC-6-22)- (9CI) (CA INDEX NAME)

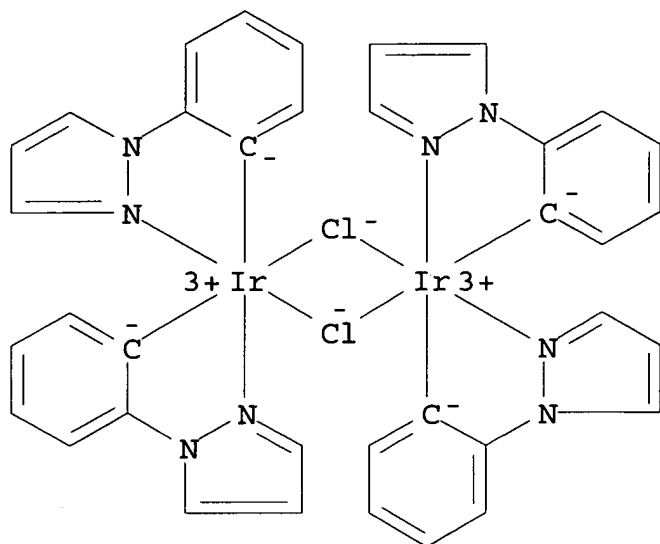


IT 57175-14-1 562099-11-0 562099-12-1  
562099-13-2 562099-14-3

(preparation, structure, DFT calcns., electrochem. redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)

RN 57175-14-1 HCAPLUS

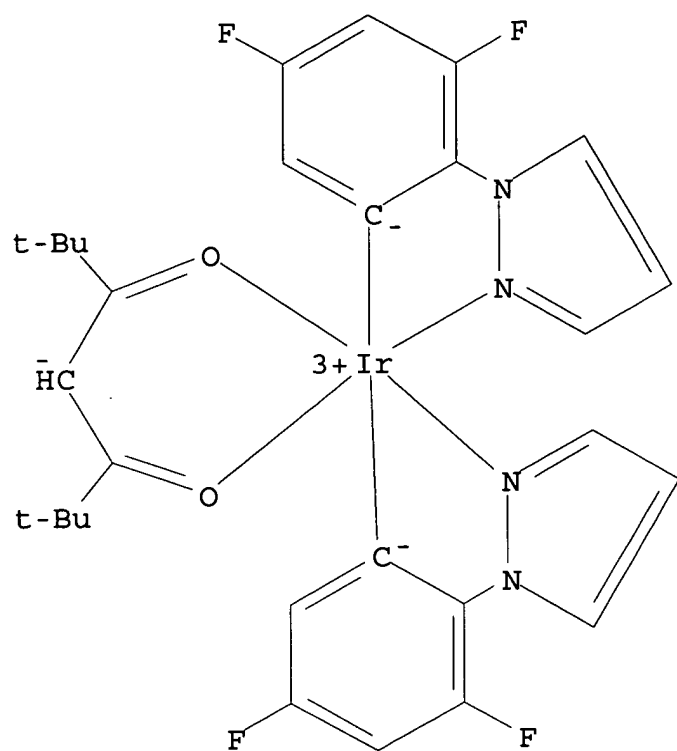
CN Iridium, di- $\mu$ -chlorotetrakis[2-(1H-pyrazol-1-yl)phenyl]di-, stereoisomer (9CI) (CA INDEX NAME)



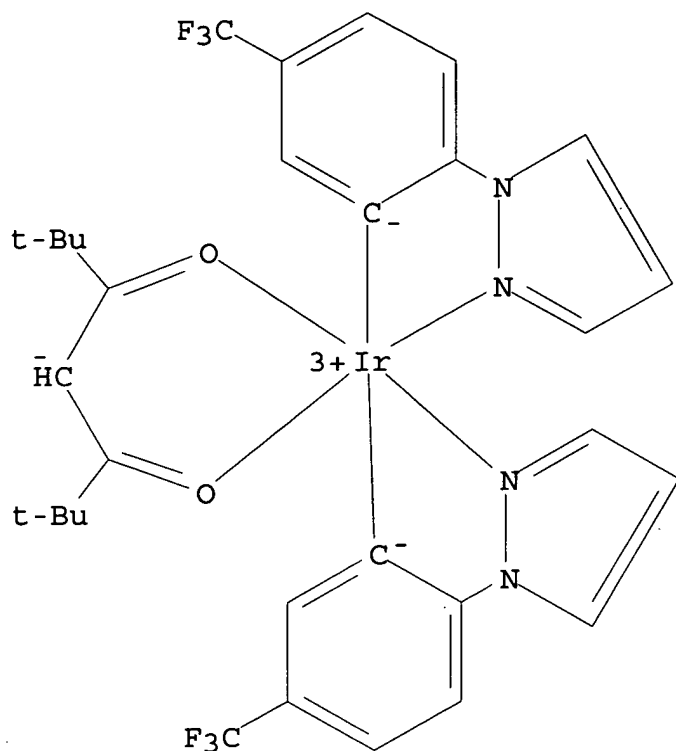
RN 562099-11-0 HCAPLUS

CN Iridium, bis[3,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C] (2,2,6,6-tetramethyl-3,5-heptanedionato- $\kappa$ O, $\kappa$ O') - (9CI) (CA INDEX NAME)



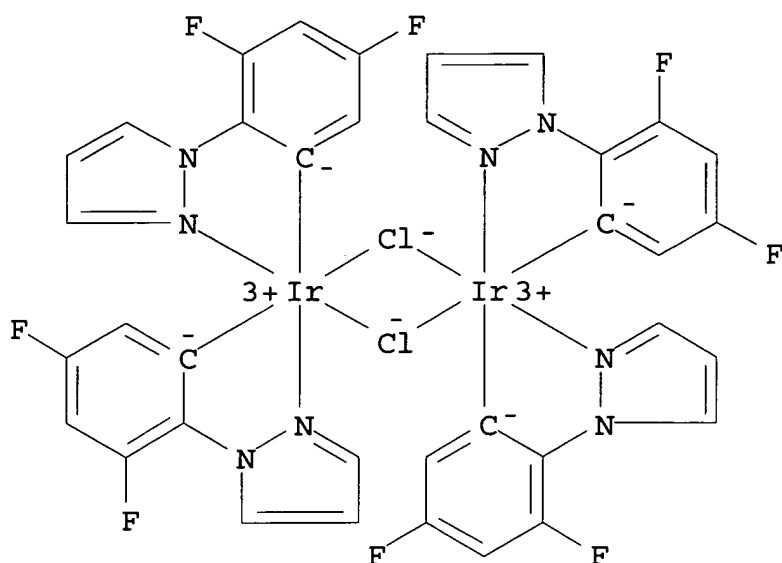


RN 562099-12-1 HCAPLUS  
 CN Iridium, bis[2-(1H-pyrazol-1-yl-κN2)-5-(trifluoromethyl)phenyl-κC] (2,2,6,6-tetramethyl-3,5-heptanedionato-κO,κO')- (9CI) (CA INDEX NAME)

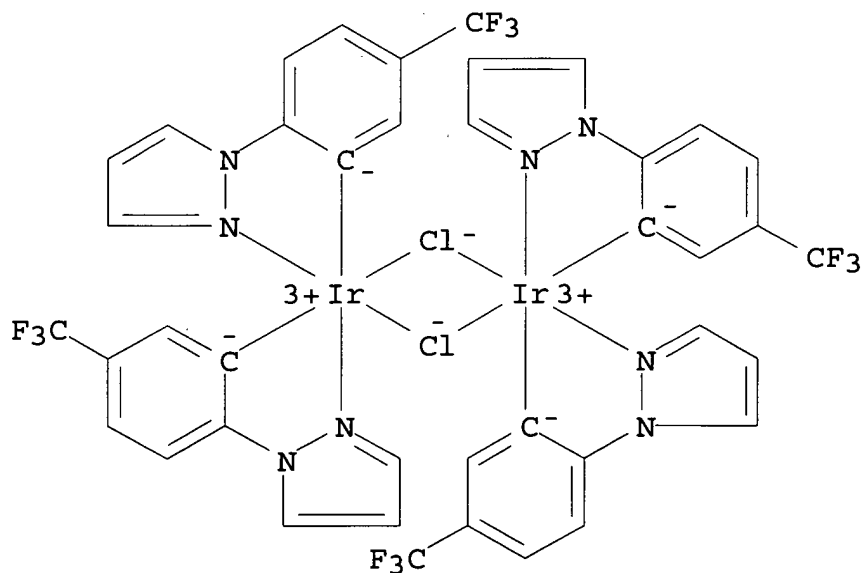


RN 562099-13-2 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[3,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di-, stereoisomer (9CI) (CA INDEX NAME)



RN 562099-14-3 HCAPLUS  
 CN Iridium, di- $\mu$ -chlorotetrakis[2-(1H-pyrazol-1-yl- $\kappa$ N2)-5-(trifluoromethyl)phenyl- $\kappa$ C]di-, stereoisomer (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 22, 72, 74, 75

ST iridium cyclometalated facial meridional prepn structure redn potential; phenylpyridyl iridium tris cyclometalated complex prepn  
 structure electrochem photophysics; phenylpyrazolyl iridium tris cyclometalated complex prepn structure electrochem photophysics; **luminescence** iridium tris cyclometalated facial meridional phenylpyridyl phenylpyrazolyl; crystal structure iridium phenylpyridyl phenylpyrazolyl tris cyclometalated complex prepn; mol structure iridium phenylpyridyl phenylpyrazolyl tris cyclometalated complex; isomerization thermal photochem meridional  
 iridium tris cyclometalated phenylpyridyl phenylpyrazolyl  
 IT HOMO (molecular orbital)  
 Hypsochromic effect  
 LUMO (molecular orbital)  
**Luminescence**  
 Total energy  
 UV and visible spectra  
 (preparation, structure, DFT calcns., electrochem. redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)  
 IT **562824-23-1P 562824-25-3P**  
 (crystal structure, isomerization; preparation, structure, DFT calcns., electrochem. redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)  
 IT **562099-09-6P 562824-20-8P**  
 (crystal structure; preparation, structure, DFT calcns., electrochem. redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)  
 IT 344426-19-3P 562824-22-0P **562824-24-2P**  
 (isomerization; preparation, structure, DFT calcns., electrochem.  
 redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)  
 IT 562099-16-5 562099-17-6 562099-18-7 **562099-19-8**  
**562099-20-1 562099-22-3 562099-23-4**  
 562099-24-5 562099-25-6 562099-26-7 562099-27-8  
 562099-28-9 562824-28-6 562824-29-7 562824-30-0  
**562824-31-1 562824-32-2 562824-34-4**  
 562824-35-5 562824-36-6 562824-37-7 562824-38-8  
 562824-39-9 562824-58-2  
 (preparation, structure, DFT calcns., electrochem. redox and photophysics of facial and meridional tris-cyclometalated iridium phenylpyridyl and phenylpyrazolyl complexes)

IT 94928-86-6P 149005-33-4P 391665-84-2P 562099-08-5P  
 (preparation, structure, DFT calcns., electrochem. redox and  
 photophysics of facial and meridional tris-cyclometalated  
 iridium phenylpyridyl and phenylpyrazolyl complexes)  
 IT 1008-89-5, 2-Phenylpyridine 1126-00-7, 1-Phenylpyrazole  
 4467-06-5 15635-87-7, Tris(acetylacetonato)iridium  
 57175-14-1 92220-65-0 116563-45-2 207797-05-5,  
 1-[4-(Trifluoromethyl)phenyl]-1H-pyrazole 391604-55-0,  
 2-(2,4-Difluorophenyl)pyridine 562099-10-9 562099-11-0  
 562099-12-1 562099-13-2 562099-14-3  
 562099-15-4 562824-27-5  
 (preparation, structure, DFT calcns., electrochem. redox and  
 photophysics of facial and meridional tris-cyclometalated  
 iridium phenylpyridyl and phenylpyrazolyl complexes)  
 REFERENCE COUNT: 76 THERE ARE 76 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS

AVAILABLE

IN THE RE FORMAT

L16 ANSWER 20 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2003:279797 HCAPLUS  
 DOCUMENT NUMBER: 138:311326  
 TITLE: Organic electroluminescent device  
 containing Ir, Pt, or Os complex for blue  
 emission  
 INVENTOR(S): Kita, Hiroshi; Yamada, Taketoshi; Matsuura,  
 Mitsunobu; Oshiyama, Tomohiro  
 PATENT ASSIGNEE(S): Konica Co., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 112 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE			
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JP 2003109758	A2	20030411	JP 2001-296657

2001

0927

PRIORITY APPLN. INFO.:

JP 2001-296657

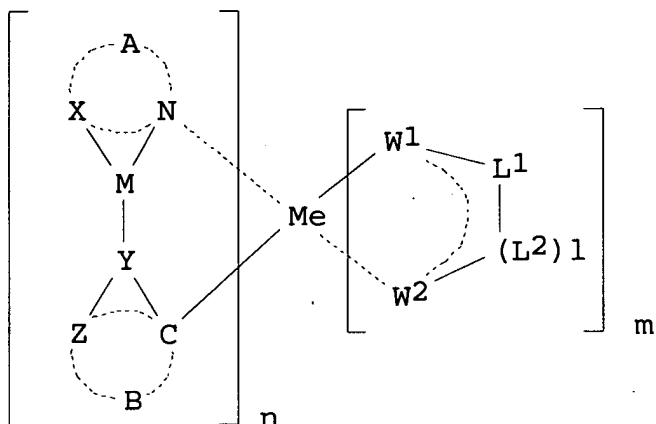
2001

0927

OTHER SOURCE(S):

MARPAT 138:311326

GI



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AB The invention refers to an organic **electroluminescent** device comprising a metal complex I, [X = C, N or O; M, Y, Z, = C or N; A = atoms necessary for a 5- or 6-membered heterocyclic containing

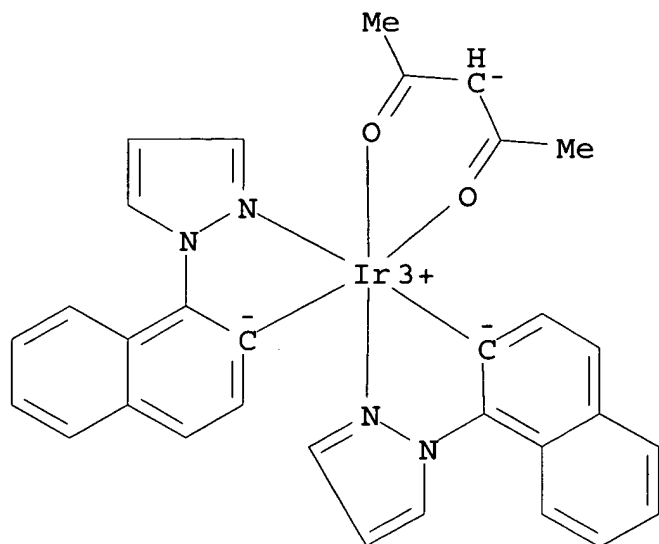
X-M-N; B = atoms necessary for a 5- or 6-membered hydrocarbon or heterocyclic ring; the two rings may each contain substituents, and adjacent groups may join together to form rings; Me = In, Pt or Os; n = 1 -4; m = dependent on the metal and the value of n; W1,2 = O, N or S; L1 = N or C; L2 = N or O; l = 1,2] wherein the dihedral angle N-M-Y-Z (in other words, the degree of twisting of the two rings) is 9° - 90°.

IT 504409-36-3

(organic **electroluminescent** device containing Ir, Pt, or Os complex for blue emission)

RN 504409-36-3 HCAPLUS

CN Iridium, (2,4-pentanedionato-κO,κO')bis[1-(1H-pyrazol-1-yl-κN2)-2-naphthalenyl-κC]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06; C07D213-06; C07F015-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent** device blue iridium metal complex

IT **Luminescence**  
(blue; organic **electroluminescent** device containing Ir, Pt, or Os complex for blue emission)

IT **Electroluminescent** devices  
(organic **electroluminescent** device containing Ir, Pt, or Os complex for blue emission)

IT 504409-31-8 504409-32-9 504409-33-0 504409-34-1  
504409-35-2 **504409-36-3** 504409-37-4 504409-38-5  
504409-39-6 504409-40-9 504409-41-0 504409-42-1  
504409-43-2 504409-44-3 504409-45-4 504409-46-5  
504409-47-6  
(organic **electroluminescent** device containing Ir, Pt, or Os complex for blue emission)

L16 ANSWER 21 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:928080 HCAPLUS

DOCUMENT NUMBER: 138:17951

TITLE: Organometallic compounds and emission-shifting  
organic electrophosphorescence

INVENTOR(S): Lamansky, Sergey; Thompson, Mark E.; Adamovich, Vadim; Djurovich, Peter I.; Adachi,

PATENT ASSIGNEE(S): Chihaya; Baldo, Marc A.; Forrest, Stephen R.;  
 SOURCE: Kwong, Raymond  
 Trustees of Princeton University, USA  
 U.S. Pat. Appl. Publ., 87 pp., Cont.-in-part  
 of U.S. Ser. No. 637,766.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
US 2002182441	A1	20021205	US 2001-978455
TW 593625	B	20040621	TW 2001-90119946
			US 2000-637766 A2
			US 2001-283814P P

AB Organic **light-emitting** devices including an  
 emissive layer comprising an organometallic compound are  
 described  
 in which the organometallic compound comprises a heavy transition  
 metal (e.g., Os, Ir, Pt, or Au) that produces an efficient  
**phosphorescent** emission at room temperature from a mixture of  
 metal-to-ligand charge transfer and  $\pi$ - $\pi^*$  ligand states;  
 $\geq 1$  mono-anionic bidentate carbon-coordination ligand bound  
 to the heavy transition metal, the ligand(s) being substituted  
 with an electron-donating substituent and/or an



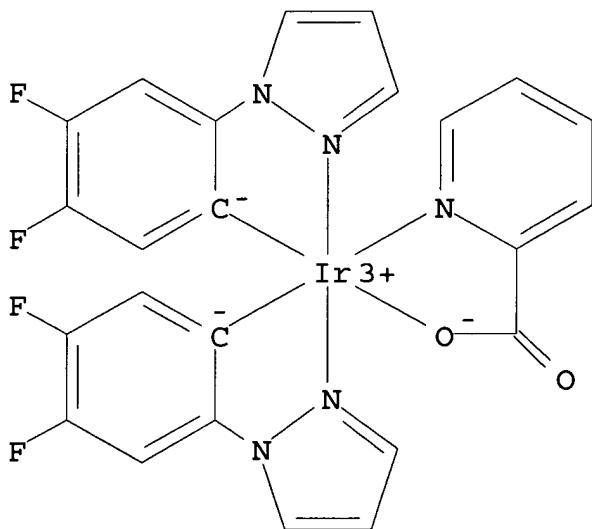
electron-withdrawing substituent which shifts the emission, relative to the unsubstituted ligand, to either the blue, green, or red region of the visible spectrum; and  $\geq 1$  non-monoanionic bidentate carbon-coordination ligand bound to the heavy transition metal which ligand(s) causes the emission to have a well defined vibronic structure. The organometallic compds. are also claimed.

IT 400654-01-5P

(organic **light-emitting** devices using emission shifting organometallic complexes and the complexes)

RN 400654-01-5 HCAPLUS

CN Iridium, bis[4,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C](2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2)- (9CI) (CA INDEX NAME)

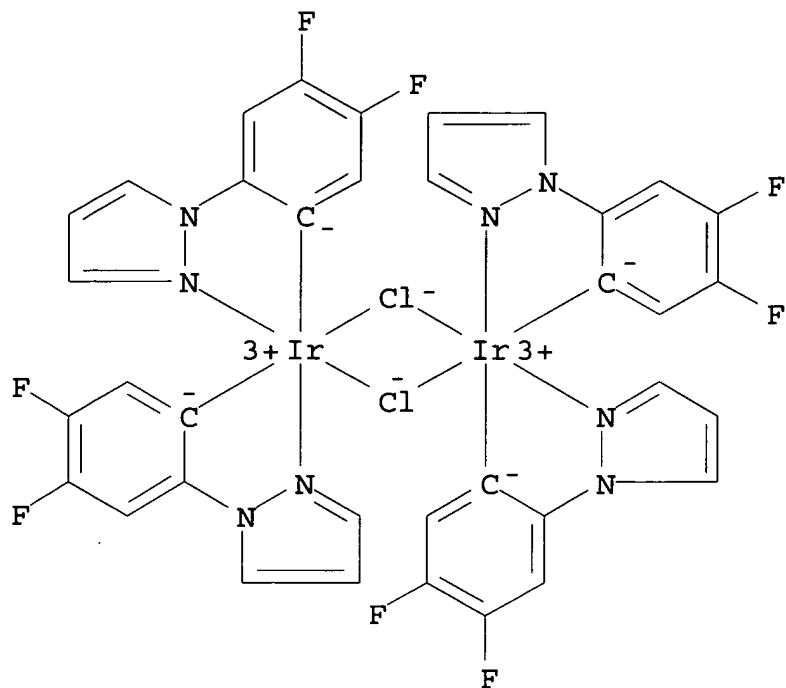


IT 400654-00-4P

(organic **light-emitting** devices using emission shifting organometallic complexes and the complexes)

RN 400654-00-4 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[4,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06

NCL 428690000; 428917000; 313504000; 313506000; 257102000; 257103000;  
252301160; 544225000; 546002000; 548101000

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 76, 78

ST **org light emitting** device emission shifting  
organometallic complex

IT **Luminescent** substances  
**Phosphorescent** substances  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)

IT **Electroluminescent** devices  
(organic; organic **light-emitting** devices using  
emission shifting organometallic complexes and the complexes)

IT 147-14-8, Copper phthalocyanine 2085-33-8, Tris(8-  
hydroxyquinolinato)aluminum 4733-39-5, Bathocuproine  
31248-39-2 50926-11-9, Indium tin oxide 58328-31-7,  
4,4'-N,N'-Dicarbazolylbiphenyl 65181-78-4, TPD 94928-86-6,  
fac-Tris(2-phenylpyridine)iridium 123847-85-8,  
4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl 146162-54-1  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)

IT 40243-13-8P 345659-08-7P 376367-93-0P 376367-95-2P  
391665-84-2P 400653-85-2P 400653-86-3P 400653-87-4P  
400653-88-5P 400653-89-6P 400653-90-9P 400653-91-0P  
400653-92-1P 400653-93-2P 400653-94-3P 400653-95-4P  
400653-96-5P 400653-97-6P 400653-98-7P **400654-01-5P**  
400654-02-6P 400654-04-8P 400654-05-9P 400654-06-0P  
400654-08-2P 400654-10-6P 400654-12-8P 400654-13-9P  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)  
IT 88821-71-0 125051-45-8 400654-15-1 400655-42-7  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)  
IT 56-40-6, Glycine, reactions 98-97-5, Pyrazinecarboxylic acid  
98-98-6, Picolinic acid 109-04-6, 2-Bromopyridine 110-86-1,  
Pyridine, reactions 123-54-6, 2,4-Pentadione, reactions  
151-50-8, Potassium cyanide 366-18-7, 2,2'-Bipyridine  
540-72-7, Sodium thiocyanide 603-35-0, Triphenylphosphine,  
reactions 939-23-1, 4-Phenylpyridine 1663-45-2,  
1,2-Bis(diphenylphosphino)ethane 7188-38-7,  
tert-Butylisocyanide  
10025-83-9, Iridium trichloride 15635-87-7, Iridium  
tris(acetylacetonate) 18583-60-3, Potassium  
tris(pyrazolyl)borate 40243-18-3 99646-28-3 125081-56-3  
144025-03-6, 2,4-Difluorophenylboronic acid 155475-93-7  
158333-96-1 400653-99-8 400654-03-7 400654-07-1  
400654-09-3 400654-11-7 400654-14-0  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)  
IT 391604-55-0P 391611-77-1P **400654-00-4P**  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)

L16 ANSWER 22 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2002:268568 HCAPLUS  
DOCUMENT NUMBER: 136:310035  
TITLE: Preparation of ortho-metalated iridium  
complexes or their tautomers  
INVENTOR(S): Kimura, Keizo; Igarashi, Tatsuya  
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE			

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JP 2002105055

A2

20020410

JP 2000-298529

2000

0929

PRIORITY APPLN. INFO.:

JP 2000-298529

2000

0929

OTHER SOURCE(S):  
GI

MARPAT 136:310035

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE  
PRINT

\*

AB Ir complexes I [Z11, Z12, Z21, Z22 = nonmetallic atomic group required to form a 5-6-membered (un)substituted (condensed) ring; L1, L2 = direct bond, divalent group; Y1, Y2 = N, C; if Y1 = N, then Q1 = direct bond; if Y1 = C, then Q1 = double bond; if Y2 = N, then Q2 = direct bond; if Y2 = C, then Q2 = double bond] or their tautomers, useful as **electroluminescent** materials (no data), are prepared from Ir compds. II (Z11, Z12, L1, Y1, Q1 = same as above; R1, R3 = aliphatic group, aryl, heterocyclyl; R2 = H, substituent; R1 and R2 or R2 and R3 may be bonded together to form a ring) or their tautomers. II or their tautomers are prepared by hexahaloiridate(III) salts or hexahaloiridate(IV) salts via diiridium complexes III (X = halo; Z11, Z12, Q1, L1 = same as above) or their tautomers. A mixture of K3IrCl6, 2-phenylpyridine, and glycerol was stirred at 180° for 2 h to give diiridium complex. MeOH solution of NaOMe was added dropwise to a mixture of the complex, AcCH2COMe, and CHCl3 at room temperature over 20 min and the reaction mixture was further stirred at room temperature for 5 h to give

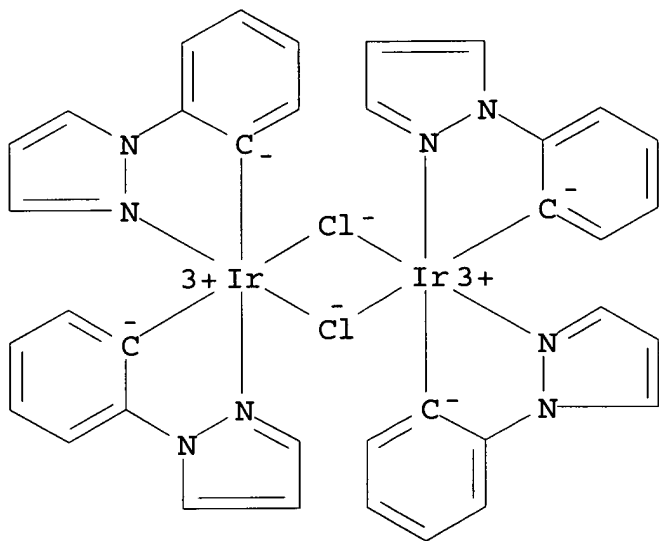
II (R1 = R3 = Me, R2 = H, CQ1Y1Z11 = benzene ring; L1 = direct bond, Z12 makes a pyridine ring together with N). This acetylacetonato complex was further treated with 2-phenylpyridine in glycerin at 170° for 2 h to give tris(2-phenylpyridine)iridium.

IT 57175-14-1P 409319-60-4P

(preparation of ortho-metallated iridium(III) complexes for electroluminescent devices)

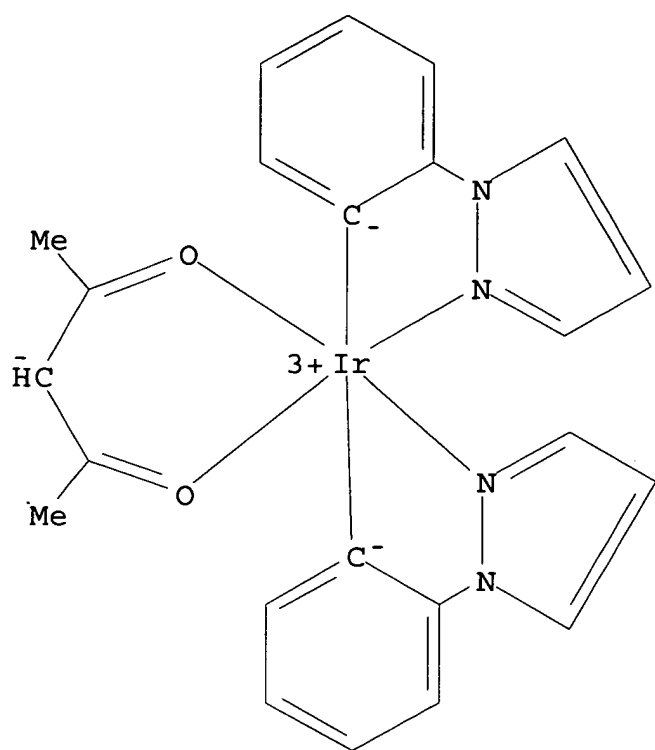
RN 57175-14-1 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(1H-pyrazol-1-yl)phenyl]di-, stereoisomer (9CI) (CA INDEX NAME)



RN 409319-60-4 HCAPLUS

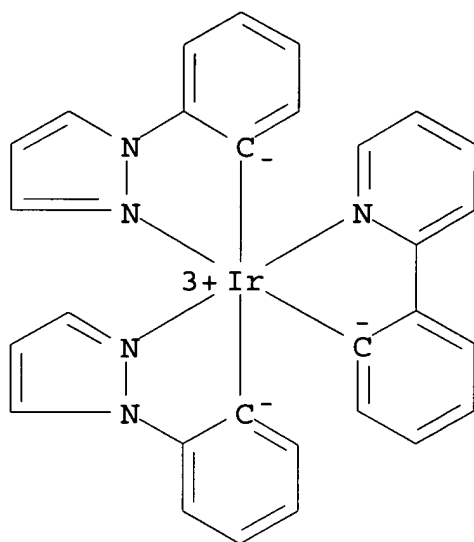
CN Iridium, (2,4-pentanedionato- $\kappa$ O, $\kappa$ O')bis[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]- (9CI) (CA INDEX NAME)



IT 359014-74-7P 409319-58-0P 409319-59-1P  
 (preparation of ortho-metalated iridium(III) complexes for  
 electroluminescent devices)

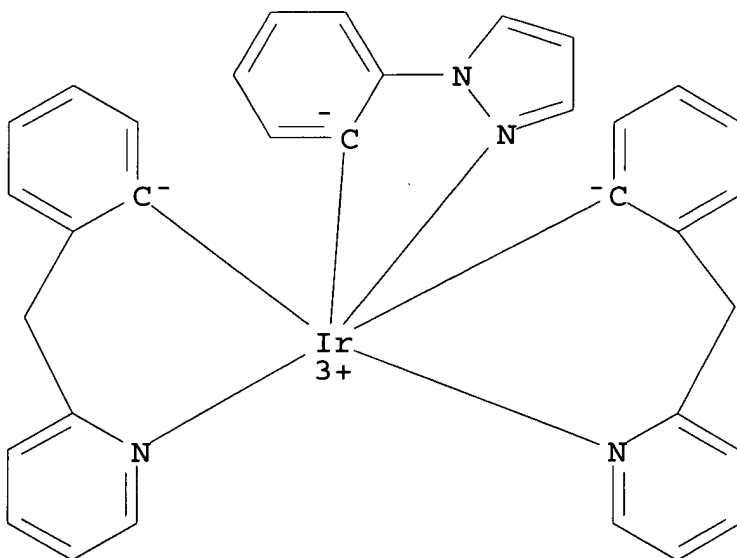
RN 359014-74-7 HCAPLUS

CN Iridium, bis[2-(1H-pyrazol-1-yl-κN2)phenyl-κC] [2-(2-  
 pyridinyl-κN)phenyl-κC] - (9CI) (CA INDEX NAME)



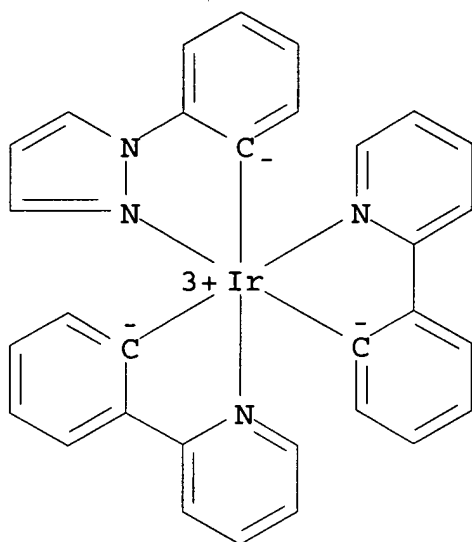
RN 409319-58-0 HCAPLUS

CN Iridium, [2-(1H-pyrazol-1-yl-κN<sub>2</sub>)phenyl-κC]bis[2-[(2-pyridinyl-κN)methyl]phenyl-κC]- (9CI) (CA INDEX NAME)



RN 409319-59-1 HCAPLUS

CN Iridium, [2-(1H-pyrazol-1-yl-κN<sub>2</sub>)phenyl-κC]bis[2-(2-pyridinyl-κN)phenyl-κC]- (9CI) (CA INDEX NAME)



- IC ICM C07D213-16  
 ICS C07D213-64; C07D213-70; C07D213-72; C07D221-10; C07D231-12;  
 C07D241-12; C07D249-04; C07D277-66; C07D401-04; C07D405-04;  
 C07D409-04; C07D417-04; C07F015-00
- CC 29-13 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 74
- ST ortho metalated iridium complex prepn **electroluminescent**  
 device; phenylpyridine iridium complex prepn  
**electroluminescent** device; potassium hexachloroiridate  
 coordination phenylpyridine
- IT **Electroluminescent** devices  
 (preparation of ortho-metalated iridium(III) complexes for  
**electroluminescent** devices)
- IT **57175-14-1P** 92220-65-0P 337526-85-9P 359014-63-4P  
 359014-64-5P **409319-60-4P**  
 (preparation of ortho-metalated iridium(III) complexes for  
**electroluminescent** devices)
- IT 94928-86-6P 359014-65-6P **359014-74-7P**  
**409319-58-0P 409319-59-1P**  
 (preparation of ortho-metalated iridium(III) complexes for  
**electroluminescent** devices)
- IT 101-82-6, 2-Benzylpyridine 123-54-6, Acetylacetone, reactions  
 1008-89-5, 2-Phenylpyridine 1126-00-7, 1-Phenylpyrazole  
 14024-41-0 16920-56-2, Dipotassium hexachloroiridate  
 58861-53-3, 2-(4-Fluorophenyl)pyridine  
 (preparation of ortho-metalated iridium(III) complexes for  
**electroluminescent** devices)



L16 ANSWER 23 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2002:237968 HCAPLUS  
 DOCUMENT NUMBER: 136:286687  
 TITLE: **Electroluminescent** display device  
 comprising iridium coordination compound with  
 high brightness and efficiency  
 INVENTOR(S): Tsuboyama, Akira; Mizutani, Hidemasa; Okada,  
 Shinjiro; Takiguchi, Takao; Miura, Seishi;  
 Moriyama, Takashi; Igawa, Satoshi; Kamatani,  
 Jun; Furugori, Manabu  
 PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan  
 SOURCE: Eur. Pat. Appl., 33 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
EP 1191612	A2	20020327	EP 2001-122937
EP 1191612	A3	20030604	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
JP 2003081988	A2	20030319	JP 2001-284600
US 2002063516	A1	20020530	US 2001-960285
US 6821646	B2	20041123	
US 2005025996	A1	20050203	US 2004-921917
JP 2000-292490 A			

2000

0926

JP 2000-360569 A

2000

1128

JP 2001-190866 A

2001

0625

JP 2001-284600 A

2001

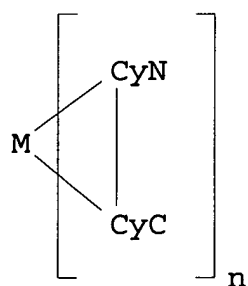
0919

US 2001-960285 A3

2001

0924

OTHER SOURCE(S) : MARPAT 136:286687  
GI



I

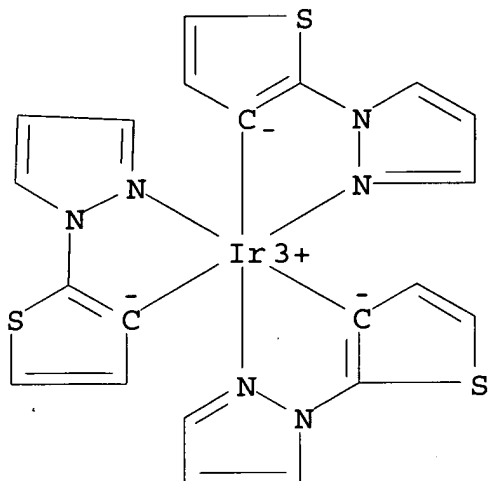
AB A **luminescence** device is principally constituted by a pair of electrodes and an organic compound layer disposed between. The

layer contains a metal coordination compound represented by the following formula I (M = Ir, Rh, Pd; n = 2, 3; CyN = cyclic group containing a nitrogen atom connected to M and capable of containing another nitrogen atom and/or a sulfur atom; CyC = cyclic group containing a carbon atom connected to M and capable of containing a nitrogen atom and/or a sulfur atom, CyN and CyC being connected to each other via a covalent bond, and each of substituents for CyN and CyC being selected from halogen atom, nitro group, trialkylsilyl containing three C1-8-alkyls, and C1-20-alkyls capable of including one or two non-neighboring methylene groups which can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH-, -C.tplbond.C- and capable of including a hydrogen atom which can be replaced with a fluorine atom; with the proviso that a sum of nitrogen atom and sulfur atom present in ring structures of CyN and CyC is at least 2). The object of the present invention is to provide an **electroluminescence** device capable of providing a high-efficiency **luminescent** state at a high brightness (or **luminance**) for a long period while minimizing the deterioration in **luminescence** in energized state. Another object of the present invention is to provide a display apparatus including the **luminescence** device.

IT 405289-72-7  
(**electroluminescent** display device comprising iridium coordination compound)

RN 405289-72-7 HCAPLUS

CN Iridium, tris[2-(1H-pyrazol-1-yl-κN2)-3-thienyl-κC]-(9CI) (CA INDEX NAME)



IC ICM H01L051-20  
ICS H05B033-14; C09K011-06  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73  
ST **electroluminescent** display iridium coordination compd  
high brightness efficiency  
IT Dipole moment  
    **Electroluminescent** devices  
    **Luminescence, electroluminescence**  
    (**electroluminescent** display device comprising iridium coordination compound)  
IT 405289-64-7 405289-65-8 405289-66-9 405289-67-0  
405289-68-1 405289-69-2 405289-70-5 405289-71-6  
405289-72-7 405518-89-0  
    (**electroluminescent** display device comprising iridium coordination compound)  
IT 405289-73-8P 405289-74-9P 405289-75-0P 405289-76-1P  
405289-77-2P  
    (**electroluminescent** display device comprising iridium coordination compound)

L16 ANSWER 24 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:221136 HCAPLUS

DOCUMENT NUMBER: 136:254380

TITLE: Organometallic complexes as  
**phosphorescent emitters** in  
organic LEDs

INVENTOR(S): Thompson, Mark E.; Djurovich, Peter;  
Lamansky,

Sergey; Murphy, Drew; Kwong, Raymond;  
 Abdel-Razzaq, Feras; Forrest, Stephen R.;  
 Baldo, Marc A.; Burrows, Paul E.  
 PATENT ASSIGNEE(S): The Trustees of Princeton University, USA;  
 The University of Southern California  
 SOURCE: U.S. Pat. Appl. Publ., 77 pp., Cont.-in-part  
 of U. S. Ser. No. 274,609, abandoned.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 5  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
US 2002034656	A1	20020321	US 2001-883734
US 6830828	B2	20041214	
US 6097147	A	20000801	US 1998-153144
US 2003017361	A1	20030123	US 2002-171235
US 2004262576	A1	20041230	US 2004-870788
			US 1998-153144 A2
			US 1999-274609 B2

0323

US 1999-311126 B2

1999

0513

US 1999-452346 B2

1999

1201

US 2001-883734 A3

2001

0618

US 2002-171235 A3

2002

0613

OTHER SOURCE(S): MARPAT 136:254380

AB Emissive layers of organic **light-emitting** devices are described which comprise a **phosphorescent** organometallic compound for enhancing the quantum efficiency of the organic **light-emitting** device. Preferably the emissive mol. is selected from the group of **phosphorescent** organometallic complexes, including cyclometallated platinum, iridium, and osmium complexes. The organic **light-emitting** devices optionally contain an exciton blocking layer. In particular, organic **light-emitting** devices with an **emitter** layer comprising organometallic complexes of transition metals of formula L<sub>2</sub>MX, wherein L and X are distinct bidentate ligandss and M is a metal which forms octahedral complexes, are described. A method of making a composition of the formula L<sub>2</sub>MX is described which entails combining a bridged dimer of formula L<sub>2</sub>M(μ-Cl)<sub>2</sub>ML<sub>2</sub> with a Bronsted acid XH to make the desired organometallic complex. Display devices incorporating

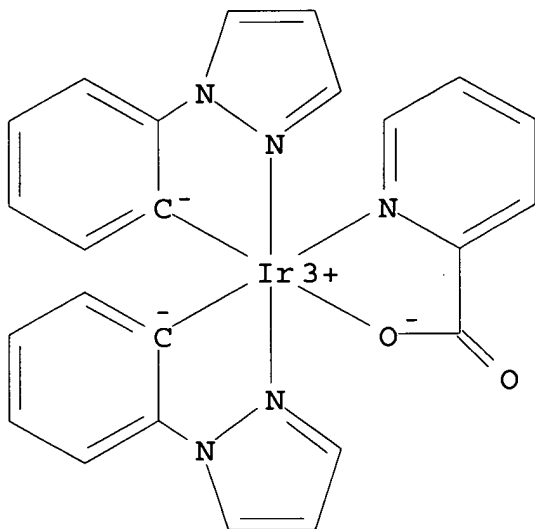
the light-emitting devices are also described.

IT 343978-88-1P

(organometallic complexes and their preparation and organic light-emitting devices using them as phosphorescent emitters)

RN 343978-88-1 HCAPLUS

CN Iridium, bis[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C](2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2)-, (OC-6-42)- (9CI) (CA INDEX NAME)

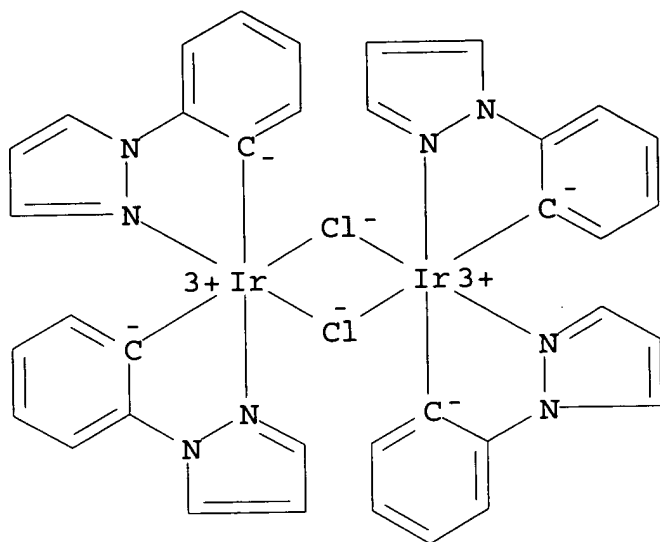


IT 57175-14-1P

(organometallic complexes and their preparation and organic light-emitting devices using them as phosphorescent emitters)

RN 57175-14-1 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(1H-pyrazol-1-yl)phenyl]di-, stereoisomer (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06  
NCL 428690000  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 74, 76, 78  
ST organometallic compd **phosphorescent emitter**  
org **light emitting** device  
IT **Electroluminescent** devices  
(organic; organometallic complexes and their preparation and organic  
light-emitting devices using them as  
phosphorescent emitters)  
IT **Phosphorescent** substances  
(organometallic complexes and their preparation and organic  
light-emitting devices using them as  
phosphorescent emitters)  
IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 4733-39-5,  
2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 7440-04-2D,  
Osmium, compds. with organic ligands 9003-53-6, Polystyrene  
25067-59-8, Polyvinylcarbazole 57102-62-2D, derivs.  
58328-31-7  
58328-31-7D, derivs. 88821-71-0 94928-86-6,  
fac-Tris(2-phenylpyridine)iridium 123847-85-8,  
4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl 180971-61-3  
212385-75-6D, derivs. 344406-74-2D, derivs.  
(organometallic complexes and their preparation and organic  
light-emitting devices using them as



- phosphorescent emitters)**  
IT 337526-86-0P 337526-88-2P 337526-89-3P 337526-98-4P  
343978-86-9P 343978-88-1P 343978-92-7P 343978-96-1P  
343978-99-4P 344426-19-3P  
(organometallic complexes and their preparation and organic  
**light-emitting** devices using them as  
**phosphorescent emitters)**  
IT 110077-26-4P 138736-22-8P 337526-85-9P 337526-87-1P  
337526-91-7P 343978-75-6P 343978-76-7P 343978-77-8P  
343978-78-9P 343978-79-0P  
(organometallic complexes and their preparation and organic  
**light-emitting** devices using them as  
**phosphorescent emitters)**  
IT 86-55-5, 1-Naphthoic acid 91-22-5, Quinoline, reactions  
95-55-6, 2-Aminophenol 98-98-6, Picolinic acid 108-86-1,  
Bromobenzene, reactions 110-02-1, Thiophene 110-86-1,  
Pyridine, reactions 123-54-6, Acetylacetone, reactions  
148-24-3, 8-Hydroxyquinoline, reactions 302-01-2, Hydrazine,  
reactions 352-93-2, Diethyl sulfide 372-48-5,  
2-Fluoropyridine  
602-09-5, 2,2'-Dihydroxy-1,1'-binaphthyl 615-36-1 1126-00-7,  
1-Phenylpyrazole 3117-65-5 4467-06-5, 2-(p-Tolyl)pyridine  
7726-95-6, Bromine, reactions 7758-02-3, Potassium bromide,  
reactions 10025-83-9, Iridium trichloride 10025-99-7,  
Potassium tetrachloroplatinate 15635-87-7 38215-36-0  
53698-49-0, 3-Methoxy-2-phenylpyridine 343978-74-5  
(organometallic complexes and their preparation and organic  
**light-emitting** devices using them as  
**phosphorescent emitters)**  
IT 1008-89-5P, 2-Phenylpyridine 1454-80-4P, 2,2'-Diaminobiphenyl  
2436-96-6P, 2,2'-Dinitrobiphenyl 3164-18-9P,  
2-(1-Naphthyl)benzoxazole 3319-99-1P, 2-(2-Thienyl)pyridine  
13029-09-9P, 2,2'-Dibromobiphenyl 34243-33-9P  
57175-14-1P 74866-28-7P, 2,2'-Dibromo-1,1'-binaphthyl  
109306-86-7P 116563-45-2P 343978-82-5P 343978-90-5P  
(organometallic complexes and their preparation and organic  
**light-emitting** devices using them as  
**phosphorescent emitters)**  
IT 15337-84-5P 15442-57-6P, cis-Dichlorobis-(diethyl  
sulfide)platinum 128025-34-3P  
(organometallic complexes and their preparation and organic  
**light-emitting** devices using them as  
**phosphorescent emitters)**

L16 ANSWER 25 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2002:143099 HCAPLUS  
DOCUMENT NUMBER: 136:191506

TITLE: Organometallic compounds and  
emission-shifting  
organic electrophosphorescence

INVENTOR(S): Lamansky, Sergey; Thompson, Mark E.;  
Adamovich, Vadim; Djurovich, Peter L.;  
Adachi,  
Chihaya; Baldo, Marc A.; Forrest, Stephen R.;  
Kwong, Raymond C.

PATENT ASSIGNEE(S): The Trustees of Princeton University, USA;  
The  
University of Southern California; Universal  
Display Corporation

SOURCE: PCT Int. Appl., 155 pp.  
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
WO 2002015645	A1	20020221	WO 2001-US25108
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
AU 2001083274	A5	20020225	AU 2001-83274

2001

0810

EP 1325671	A1	20030709	EP 2001-962061
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2001

0810

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR  
JP 2004506305 T2 20040226 JP 2002-519380

2001

0810

TW 593625 B 20040621 TW 2001-90119946

2001

0813

PRIORITY APPLN. INFO.:

US 2000-637766 A

2000

0811

US 2001-283814P P

2001

0413

WO 2001-US25108 W

2001

0810

AB Organic **light-emitting** devices including an  
emissive layer comprising an organometallic compound are  
described

in which the organometallic compound comprises a heavy transition  
metal (e.g., Os, Ir, Pt, or Au) that produces an efficient  
**phosphorescent** emission at room temperature from a mixture of  
metal-to-ligand charge transfer and  $\pi$ - $\pi^*$  ligand states;  
 $\geq 1$  mono-anionic bidentate carbon-coordination ligand bound  
to the heavy transition metal, the ligand(s) being substituted  
with an electron-donating substituent and/or an  
electron-withdrawing substituent which shifts the emission,  
relative to the unsubstituted ligand, to either the blue, green,  
or red region of the visible spectrum; and  $\geq 1$   
non-monoanionic bidentate carbon-coordination ligand bound to the  
heavy transition metal which ligand(s) causes the emission to

have

a well defined vibronic structure. The organometallic compds. are

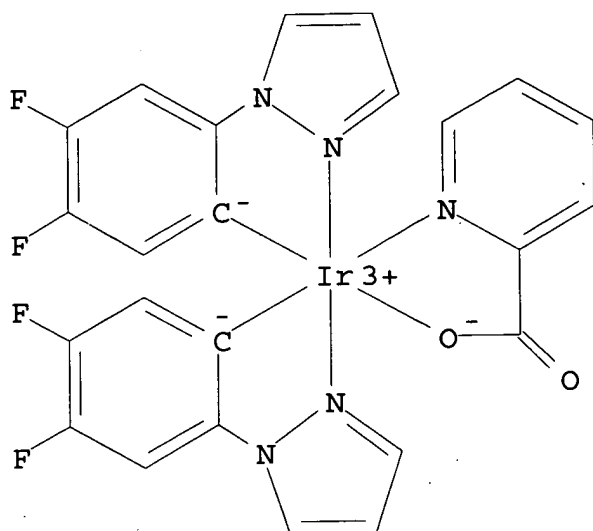
also claimed.

IT 400654-01-5P

(organic **light-emitting** devices using emission shifting organometallic complexes and the complexes)

RN 400654-01-5 HCAPLUS

CN Iridium, bis[4,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C](2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2)- (9CI) (CA INDEX NAME)

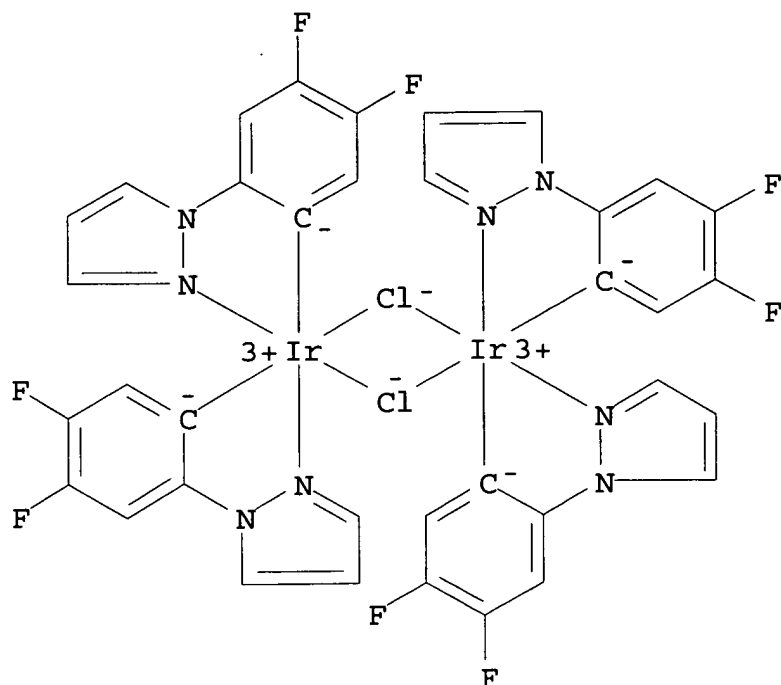


IT 400654-00-4P

(organic **light-emitting** devices using emission shifting organometallic complexes and the complexes)

RN 400654-00-4 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[4,5-difluoro-2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]di- (9CI) (CA INDEX NAME)



- IC ICM H05B033-14  
ICS C09K011-06; C07D213-02; C07D231-10; C07D241-10; C07D333-52  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 76, 78  
ST org **light emitting** device emission shifting  
organometallic complex  
IT **Luminescent** substances  
Phosphorescent substances  
(organic **light-emitting** devices using emission shifting organometallic complexes and the complexes)  
IT **Electroluminescent** devices  
(organic; organic **light-emitting** devices using emission shifting organometallic complexes and the complexes)  
IT 147-14-8, Copper phthalocyanine 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 4733-39-5, Bathocuproine 31248-39-2 50926-11-9, Indium tin oxide 58328-31-7, 4,4'-N,N'-Dicarbazolylbiphenyl 65181-78-4, TPD 94928-86-6, fac-Tris(2-phenylpyridine)iridium 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl 146162-54-1  
(organic **light-emitting** devices using emission shifting organometallic complexes and the complexes)  
IT 40243-13-8P 345659-08-7P 376367-93-0P 376367-95-2P  
391665-84-2P 400653-85-2P 400653-86-3P 400653-87-4P

(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)

IT 88821-71-0 125051-45-8 400654-15-1 400655-42-7  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)

IT 56-40-6, Glycine, reactions 98-97-5, Pyrazinecarboxylic acid  
98-98-6, Picolinic acid 109-04-6, 2-Bromopyridine 110-86-1,  
Pyridine, reactions 123-54-6, 2,4-Pentadione, reactions  
151-50-8, Potassium cyanide 366-18-7, 2,2'-Bipyridine  
540-72-7, Sodium thiocyanide 603-35-0, Triphenylphosphine,  
reactions 939-23-1, 4-Phenylpyridine 1663-45-2,  
1,2-Bis(diphenylphosphino)ethane 7188-38-7,  
tert-Butylisocyanide  
10025-83-9, Iridium trichloride 15635-87-7, Iridium  
tris(acetylacetonate) 18583-60-3, Potassium  
tris(pyrazolyl)borate 40243-18-3 99646-28-3 125081-56-3  
144025-03-6, 2,4-Difluorophenylboronic acid 155475-93-7  
158333-96-1 400653-99-8 400654-03-7 400654-07-1  
400654-09-3 400654-11-7 400654-14-0  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)

IT 391604-55-0P 391611-77-1P **400654-00-4P**  
(organic **light-emitting** devices using emission  
shifting organometallic complexes and the complexes)

AVAILABLE

IN THE RE FORMAT

CODEN: USXXCO

DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

DATE	PATENT NO.	KIND	DATE	APPLICATION NO.
----- -----	-----	----	-----	-----
2000	US 2001019782	A1	20010906	US 2000-747933
1227	US 6821645	B2	20041123	
	JP 2001247859	A2	20010914	JP 2000-299495
2000				
0929	JP 2001345183	A2	20011214	JP 2000-298470
2000				
0929	US 2005003233	A1	20050106	US 2004-844394
2004				
0513				
PRIORITY APPLN. INFO.:			JP 1999-370349	A
1999				
1227				
			JP 2000-89274	A
2000				
0328				
			JP 2000-298470	A
2000				
0929				

JP 2000-299495

A

2000

0929

US 2000-747933

A3

2000

1227

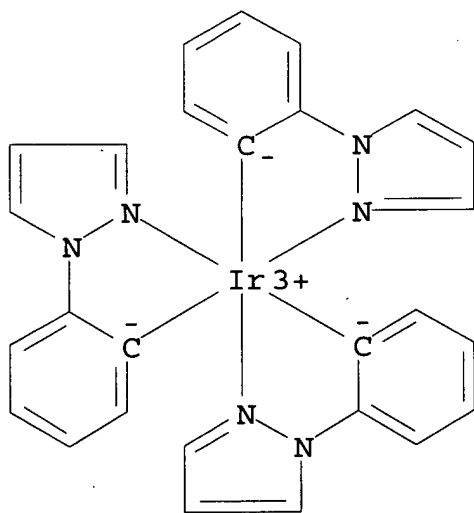
OTHER SOURCE(S): MARPAT 135:233635

AB **Light-emitting** materials comprising orthometalated iridium complexes with  $\geq 1$  ligand comprising a nitrogen-containing heterocyclic derivs., and the complexes, are described. **Electroluminescent** devices employing the complexes are also described.

IT 359014-72-5 359014-73-6 359014-74-7  
(**light-emitting** materials comprising orthometalated iridium complexes and **light-emitting** devices using them and iridium complexes)

RN 359014-72-5 HCAPLUS

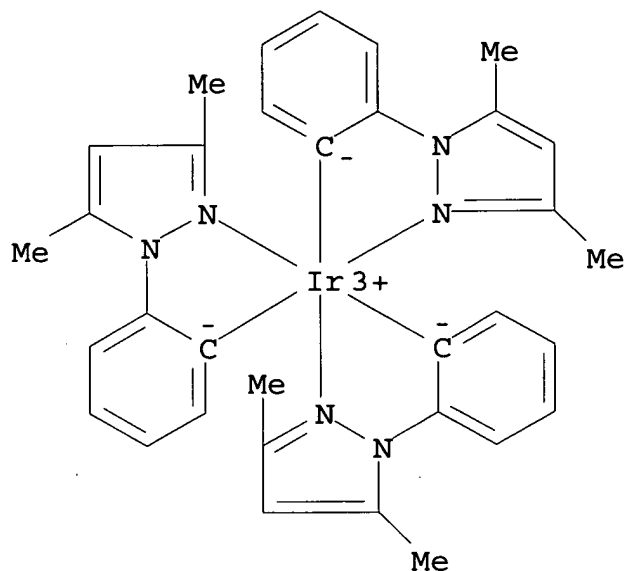
CN Iridium, tris[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]- (9CI)  
(CA INDEX NAME)



RN 359014-73-6 HCAPLUS

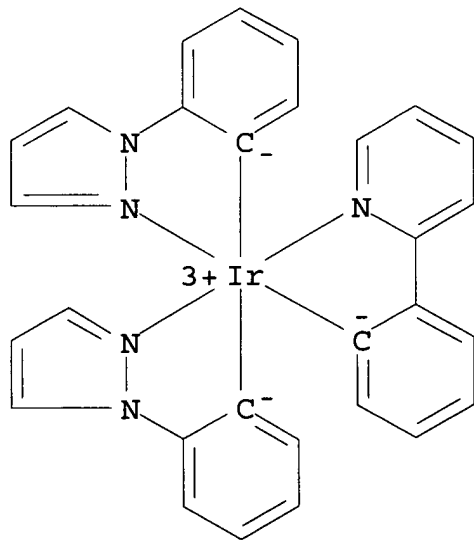


CN Iridium, tris[2-(3,5-dimethyl-1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C]- (9CI) (CA INDEX NAME)



RN 359014-74-7 HCAPLUS

CN Iridium, bis[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C][2-(2-pyridinyl- $\kappa$ N)phenyl- $\kappa$ C]- (9CI) (CA INDEX NAME)



IC H05B003-312; C07F015-00; C07D213-02; C07D221-02; C07D247-00;

C07D009-04  
NCL 428690000  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 76, 78  
ST **luminescent** material orthometalated iridium complex;  
**electroluminescent** device orthometalated iridium complex  
IT **Electroluminescent** devices  
    **Luminescent** substances  
        (light-emitting materials comprising  
          orthometalated iridium complexes and **light-**  
          **emitting** devices using them and iridium complexes)  
IT 7429-90-5, Aluminum, uses 15082-28-7 25067-59-8,  
Poly(N-vinylcarbazole) 37271-44-6 50926-11-9, ITO  
52352-02-0  
58328-31-7 94928-86-6 123847-85-8,  $\alpha$ -NPD 153838-48-3  
343978-78-9 358974-63-7 358974-66-0 359014-71-4  
**359014-72-5 359014-73-6 359014-74-7**  
359014-75-8 359014-77-0 359014-78-1 359014-79-2  
    (light-emitting materials comprising  
    orthometalated iridium complexes and **light-**  
    **emitting** devices using them and iridium complexes)  
IT 359014-63-4P 359014-64-5P 359014-69-0P  
    (light-emitting materials comprising  
    orthometalated iridium complexes and **light-**  
    **emitting** devices using them and iridium complexes)  
IT 337526-95-1P 359014-65-6P 359014-66-7P 359014-67-8P  
359014-68-9P 359014-70-3P 359014-76-9P  
    (light-emitting materials comprising  
    orthometalated iridium complexes and **light-**  
    **emitting** devices using them and iridium complexes)  
IT 101-82-6, 2-Benzylpyridine 123-54-6, Acetylacetone, reactions  
612-96-4, 2-Phenylquinoline 630-08-0, Carbon monoxide,  
reactions  
1008-89-5, 2-Phenylpyridine 10025-83-9, Iridium trichloride  
16920-56-2 20375-65-9 24702-41-8 47077-29-2  
    (light-emitting materials comprising  
    orthometalated iridium complexes and **light-**  
    **emitting** devices using them and iridium complexes)  
IT 50851-57-5  
    (polyethylene dioxythiophene doped with; **light-**  
    **emitting** materials comprising orthometalated iridium  
    complexes and **light-emitting** devices using  
    them and iridium complexes)  
IT 126213-51-2, Poly(3,4-ethylenedioxythiophene)  
    (polystyrene sulfonate-doped; **light-emitting**  
    materials comprising orthometalated iridium complexes and

light-emitting devices using them and iridium complexes)

L16 ANSWER 27 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:417332 HCAPLUS

DOCUMENT NUMBER: 135:53380

TITLE: Complexes of form L2MX as  
phosphorescent dopants for organic  
LEDs

INVENTOR(S): Thompson, Mark E.; Djurovich, Peter;  
Lamansky,

Sergey; Murphy, Drew; Kwong, Raymond;  
Abdel-Razzaq, Feras; Forrest, Stephen R.;  
Baldo, Marc A.; Burrows, Paul E.

PATENT ASSIGNEE(S): Trustees of Princeton University, USA;  
University of Southern California

SOURCE: PCT Int. Appl., 88 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 5

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE			
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WO 2001041512	A1	20010607	WO 2000-US32511

2000

1129

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,  
TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ,  
BY, KG, KZ, MD, RU, TJ, TM  
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE,  
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,  
PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR,  
NE, SN, TD, TG

EP 1252803 A1 20021030 EP 2000-980863

2000

1129

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR  
JP 2003515897 T2 20030507 JP 2001-541304

2000

1129

TW 581762 B 20040401 TW 2000-89125494

2000

1130

PRIORITY APPLN. INFO.: US 1999-452346 A

1999

1201

WO 2000-US32511 W

2000

1129

OTHER SOURCE(S): MARPAT 135:53380

AB Organic **light-emitting** devices are described in which an **emitter** layer comprises compds. (e.g., as dopants within a host) which are described by the general formula L2MX (L and X are inequivalent bidentate ligands; and M is a metal

which forms octahedral complexes). Devices with **emitter** layers comprising **phosphorescent** compds. described by the general formula LL'L"M (L, L', and L" = inequivalent bidentate ligands) and comprising L'''2M (L''' = a monoanionic bidentate ligand coordinated to M through an sp<sup>2</sup> carbon and a heteroatom; and wherein the heteroatoms of the two L ligands are in a trans configuration) are also described. The preparation of L2MX

by combining a bridged dimer described by the general formula L2M( $\mu$ -Cl)2ML2 with a Bronsted acid XH to make an organometallic complex of formula LMX is also described. Synthetic options

allow

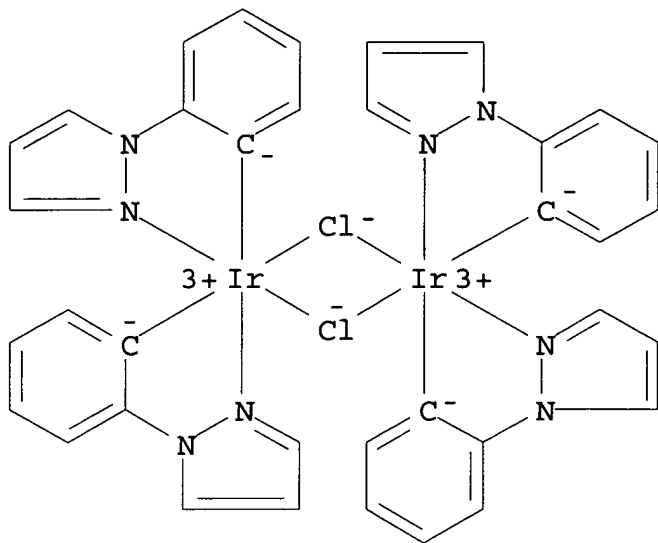
insertion of **fluorescent** mols. into a **phosphorescent** complex, ligands to fine tune the color of emission, and ligands to trap carriers. 3-Methoxy-2-phenylpyridine.

IT 57175-14-1P 343978-88-1P

(phosphorescent cyclometallated complex dopants for organic light-emitting devices and their preparation)

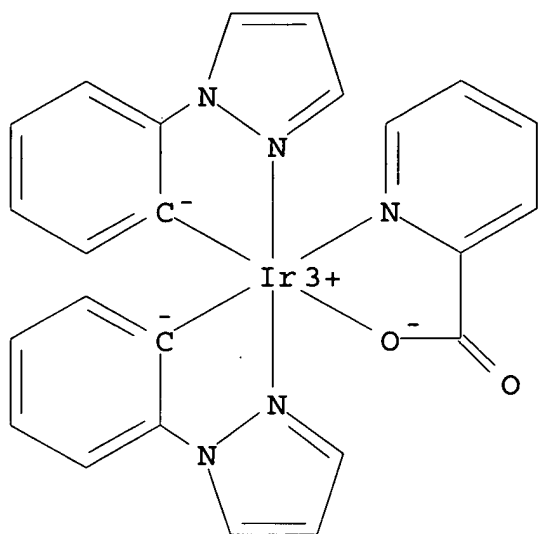
RN 57175-14-1 HCAPLUS

CN Iridium, di- $\mu$ -chlorotetrakis[2-(1H-pyrazol-1-yl)phenyl]di-, stereoisomer (9CI) (CA INDEX NAME)



RN 343978-88-1 HCAPLUS

CN Iridium, bis[2-(1H-pyrazol-1-yl- $\kappa$ N2)phenyl- $\kappa$ C](2-pyridinecarboxylato- $\kappa$ N1, $\kappa$ O2)-, (OC-6-42)- (9CI) (CA INDEX NAME)



- IC ICM H05B033-14  
ICS C07D213-02; C07D215-02; C07D231-12; C07D263-57; C07D277-66;  
C07D333-50; C07D409-04; C07D417-04
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 29, 74, 76, 78
- ST **phosphorescent** cyclometallated complex dopant org  
**light emitting** device; iridium complex dopant  
org **light emitting** device; osmium complex  
dopant org **light emitting** device; platinum  
complex dopant org **light emitting** device
- IT Phosphors  
(**electroluminescent**; **phosphorescent**  
cyclometallated complex dopants for organic **light-**  
**emitting** devices and their preparation)
- IT **Electroluminescent** devices  
(organic; **phosphorescent** cyclometallated complex dopants  
for organic **light-emitting** devices and their  
preparation)
- IT **Fluorescent** substances  
**Phosphorescent** substances  
(**phosphorescent** cyclometallated complex dopants for  
organic **light-emitting** devices and their  
preparation)
- IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 4733-39-5,  
Bathocuproine 7440-04-2D, Osmium, compds. with organic ligands,  
uses 7440-06-4D, Platinum, compds. with organic ligands, uses  
37271-44-6 50926-11-9, Indium tin oxide 57102-62-2D, derivs.

58328-31-7 58328-31-7D, derivs. 212385-75-6D, derivs.  
344406-74-2D, derivs.

(**phosphorescent** cyclometallated complex dopants for  
organic **light-emitting** devices and their  
preparation)

IT 57175-14-1P 337526-85-9P 337526-86-0P 337526-87-1P  
337526-88-2P 337526-89-3P 337526-91-7P 337526-98-4P  
343978-74-5P 343978-75-6P 343978-76-7P 343978-77-8P  
343978-78-9P 343978-79-0P 343978-82-5P 343978-86-9P  
343978-88-1P 343978-92-7P 343978-94-9P 343978-96-1P  
343978-99-4P 344426-19-3P

(**phosphorescent** cyclometallated complex dopants for  
organic **light-emitting** devices and their  
preparation)

IT 86-55-5, 1-Naphthoic acid 95-55-6, 2-Aminophenol 98-98-6,  
Picolinic acid 123-54-6, Acetylacetone, reactions 148-24-3,  
8-Hydroxyquinoline, reactions 230-27-3, 7,8-Benzoquinoline  
1126-00-7, 1-Phenylpyrazole 1522-22-1, Hexafluoroacetylacetone  
3117-65-5 4467-06-5, 2-(p-Tolyl)pyridine 10025-83-9, Iridium  
trichloride 15635-87-7, Iridium trisacetylacetonate  
53698-49-0, 3-Methoxy-2-phenylpyridine 70546-18-8 116563-45-2  
337526-80-4 338387-34-1 338387-84-1 343978-71-2  
343978-72-3 343978-73-4

(**phosphorescent** cyclometallated complex dopants for  
organic **light-emitting** devices and their  
preparation)

IT 3164-18-9P, 2-(1-Naphthyl)benzoxazole 343978-90-5P  
(**phosphorescent** cyclometallated complex dopants for  
organic **light-emitting** devices and their  
preparation)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS  
AVAILABLE

IN THE RE FORMAT

L16 ANSWER 28 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1991:237418 HCAPLUS

DOCUMENT NUMBER: 114:237418

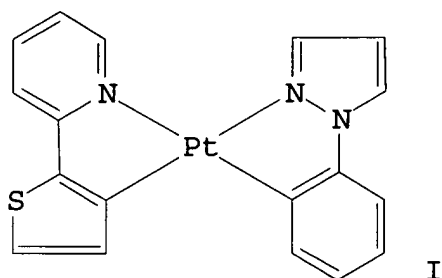
TITLE: Excited-state annihilation process involving  
a

cyclometalated platinum(II) complex  
AUTHOR(S): Maestri, Mauro; Sandrini, Diana; Von  
Zelevsky,

Alex; Deuschel-Cornioley, Christine  
CORPORATE SOURCE: Dep. Chem., Univ. Bologna, Bologna, Italy  
SOURCE: Inorganic Chemistry (1991), 30(11), 2476-8  
CODEN: INOCAJ; ISSN: 0020-1669

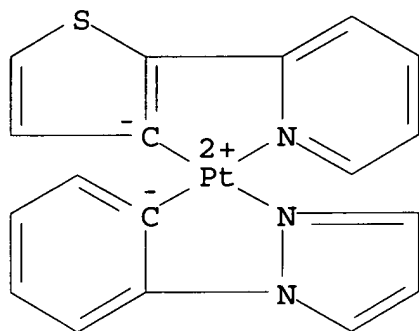
DOCUMENT TYPE:  
LANGUAGE:  
GI

Journal  
English



- AB The Pt complex I exhibits strong **luminescence** with a relatively long excited-state lifetime (15.3  $\mu$ s) in deaerated acetonitrile solution, at room temperature and at low excitation intensity, and can be easily involved in excited-state quenching processes. The 3CT excited state is, in fact, quenched (1) by oxygen ( $k_q = 109 \text{ M}^{-1} \text{ s}^{-1}$ ), (2) by the ground-state complex ( $k_q = 5.7 + 107 \text{ M}^{-1} \text{ s}^{-1}$ ), and (3) by another 3CT excited state in an annihilation process, which is practically diffusion controlled ( $k_3 > 6 + 109 \text{ M}^{-1} \text{ s}^{-1}$ ). The ground-state quenching and the annihilation process most probably occur via an excimer formation mechanism.
- IT **122658-63-3**  
(photochem. and photophys. properties of, excited-state annihilation process in)
- RN 122658-63-3 HCAPLUS
- CN Platinum, [2-(1H-pyrazol-1-yl)phenyl][2-(2-pyridinyl)-3-thienyl-C3,N2]-, (SP-4-3)- (9CI) (CA INDEX NAME)





CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

ST platinum cyclometalated complex excited state annihilation;  
quenching kinetics excited platinum cyclometalated complex;  
photolysis platinum cyclometalated complex photophys; excimer  
platinum cyclometalated complex **luminescence** quenching

IT **Luminescence** quenching  
(of cyclometalated platinum(II) complex)

IT 122658-63-3  
(photochem. and photophys. properties of, excited-state  
annihilation process in)

L16 ANSWER 29 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1990:580107 HCAPLUS

DOCUMENT NUMBER: 113:180107

TITLE: Spectroscopic and electrochemical behavior of  
new mixed-ligand cyclometalated rhodium(III)  
complexes

AUTHOR(S): Sandrini, Diana; Maestri, Mauro; Ciano,  
Mauro;

CORPORATE SOURCE: Maeder, Urs; Von Zelewsky, Alex  
Dip. Chim. 'G. Ciamician', Univ. Bologna,  
Bologna, I-40126, Italy

SOURCE: Helvetica Chimica Acta (1990), 73(5), 1306-13  
CODEN: HCACAV; ISSN: 0018-019X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The absorption spectra, **luminescence** spectra,  
excited-state lifetimes, and electrochem. behavior of the  
cyclometalated [Rh(ppz)2bpy]<sup>+</sup>, [Rh(3-Cl-ppz)2(bpy)]<sup>+</sup>,  
[Rh(4-NO2-ppz)2(bpy)]<sup>+</sup>, [Rh(ppz)2(biq)]<sup>+</sup>, and [Rh(4-NO2-  
ppz)2(biq)]<sup>+</sup> complexes (ppz-, 3-Cl-ppz-, and 4-NO2-ppz- are the  
ortho-C-deprotonated forms of 1-phenylpyrazole,

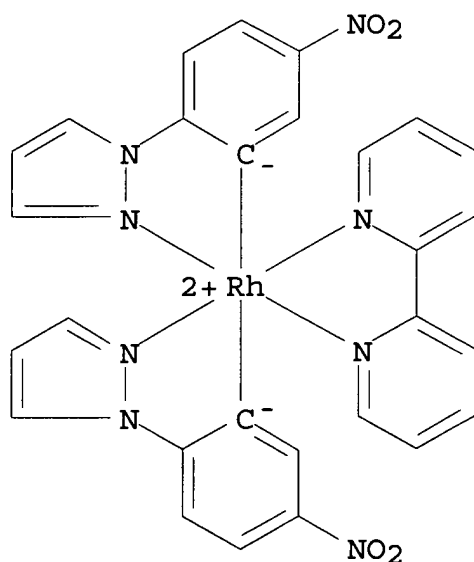
1-(3-chlorophenyl)pyrazole and 1-(4-nitrophenyl)pyrazole, resp.) have been investigated. The results obtained have been compared with those concerning the free protonated ligands and some previously studied mixed-ligand cyclometalated Rh(III) complexes. **Luminescence** originates from the lowest ligand-centered (LC) excited state, which involves the diimine ligands in all cases except for  $[\text{Rh}(4\text{-NO}_2\text{-ppz})_2(\text{bpy})]^+$ , where it involves the ortho-metallating ligands. In the absorption spectra, LC and metal-to-ligand charge-transfer (MLCT) bands, involving the diimine and/or the ortho-metallating ligands, have been assigned, and correlations between spectroscopic and electrochem. data are discussed.

IT 130102-41-9 130102-42-0 130102-43-1  
 130102-44-2 130102-45-3 130102-46-4  
 130102-47-5 130102-48-6 130102-49-7  
 130102-50-0

(elec. potential of redox couple containing)

RN 130102-41-9 HCAPLUS

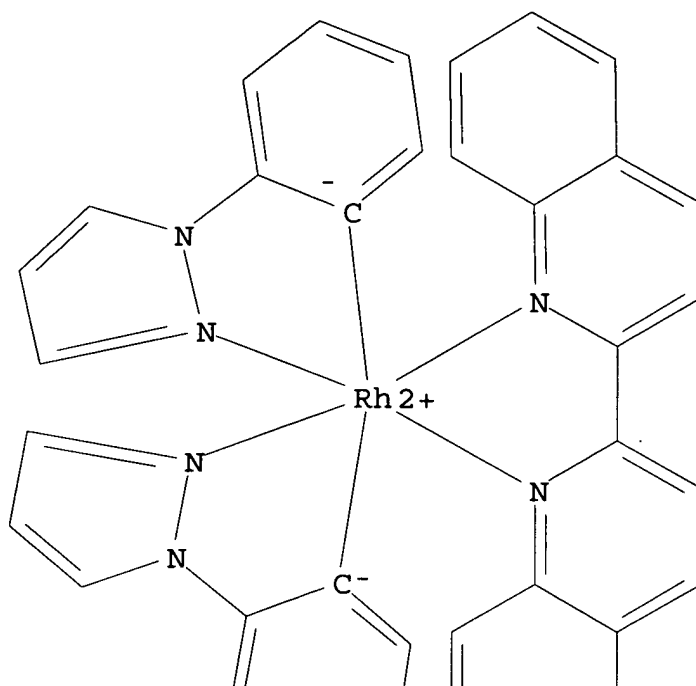
CN Rhodium, (2,2'-bipyridine-N,N')bis[5-nitro-2-(1H-pyrazol-1-yl)phenyl]- (9CI) (CA INDEX NAME)



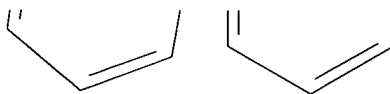
RN 130102-42-0 HCAPLUS

CN Rhodium, (2,2'-biquinoline-N,N')bis[2-(1H-pyrazol-1-yl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

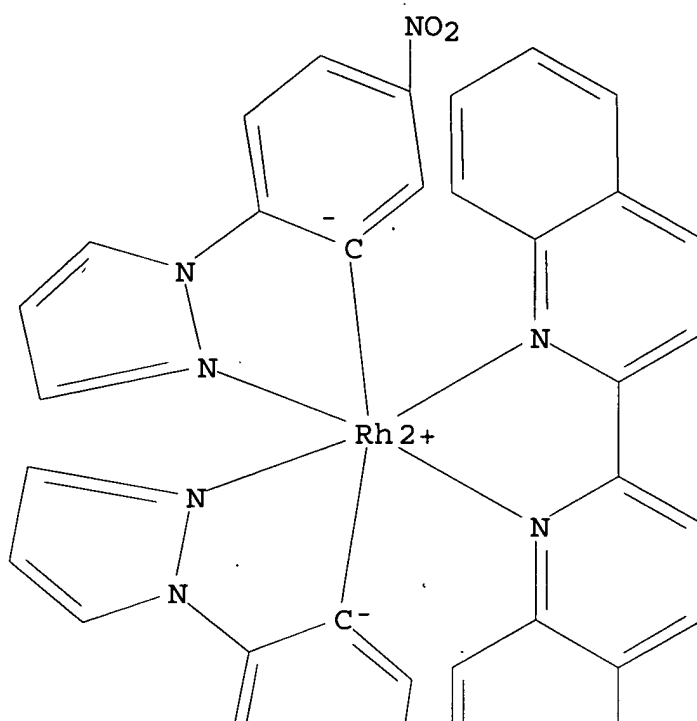


PAGE 2-A

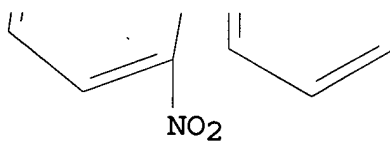


RN 130102-43-1 HCAPLUS  
CN Rhodium, (2,2'-biquinoline-N,N') [5-nitro-2-(1H-pyrazol-1-yl)phenyl]- (9CI) (CA INDEX NAME)

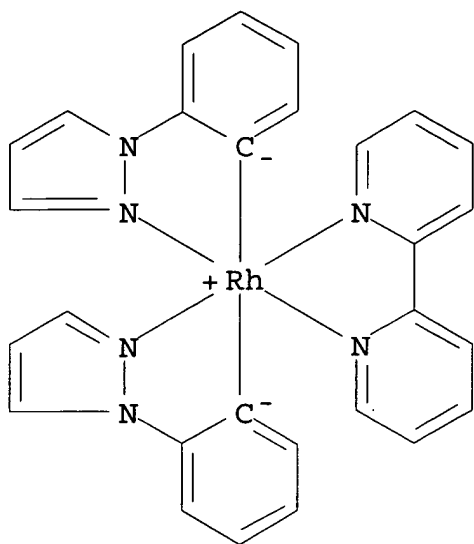
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PAGE 2-A

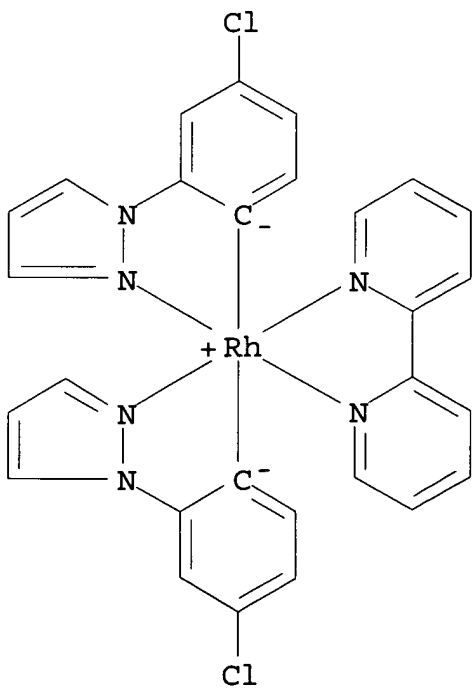


RN 130102-44-2 HCAPLUS  
 CN Rhodate(1-),  
 (2,2'-bipyridine-N,N')bis[2-(1H-pyrazol-1-yl)phenyl] -  
 (9CI) (CA INDEX NAME)



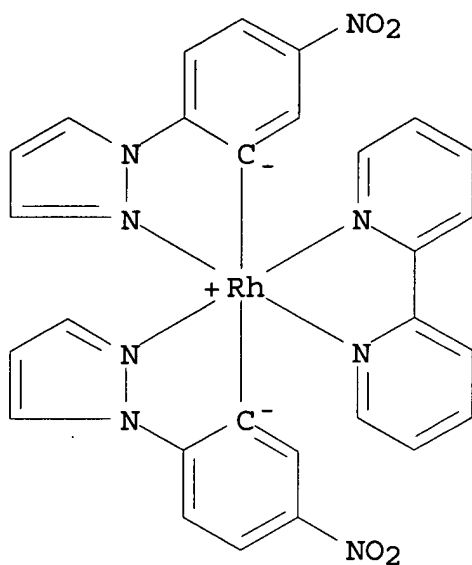
RN 130102-45-3 HCAPLUS

CN Rhodate(1-), (2,2'-bipyridine-N,N')bis[4-chloro-2-(1H-pyrazol-1-yl)phenyl]- (9CI) (CA INDEX NAME)



RN 130102-46-4 HCAPLUS

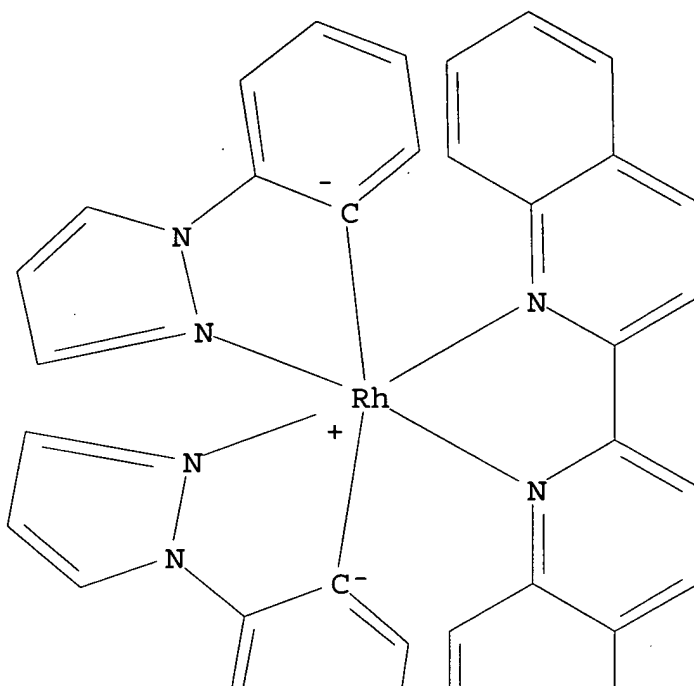
CN Rhodate(1-), (2,2'-bipyridine-N,N')bis[5-nitro-2-(1H-pyrazol-1-yl)phenyl]- (9CI) (CA INDEX NAME)



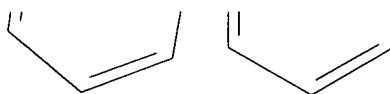
RN 130102-47-5 HCAPLUS

CN Rhodate(1-),  
(2,2'-biquinoline-N,N')bis[2-(1H-pyrazol-1-yl)phenyl]-  
(9CI) (CA INDEX NAME)

PAGE 1-A

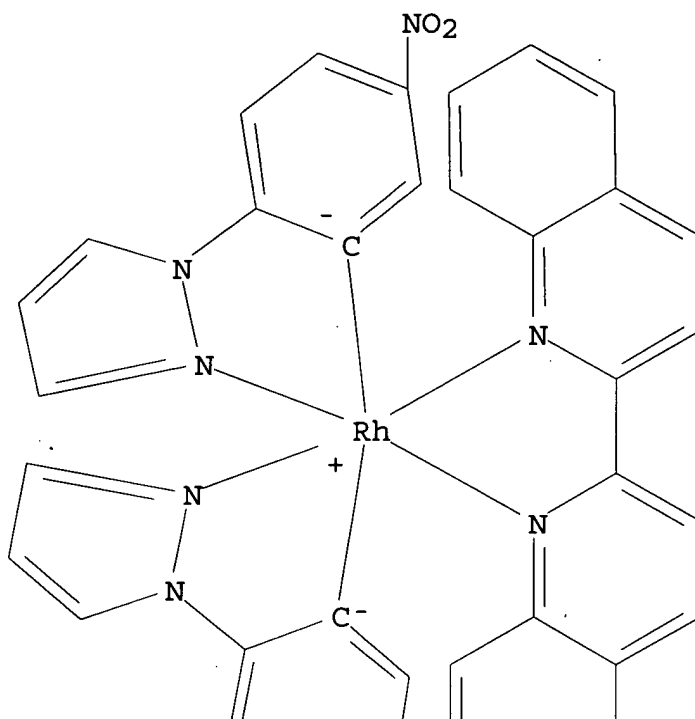


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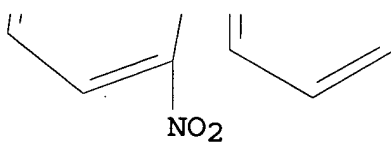


RN 130102-48-6 HCAPLUS  
CN Rhodate(1-), (2,2'-biquinoline-N,N') [5-nitro-2-(1H-pyrazol-1-yl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



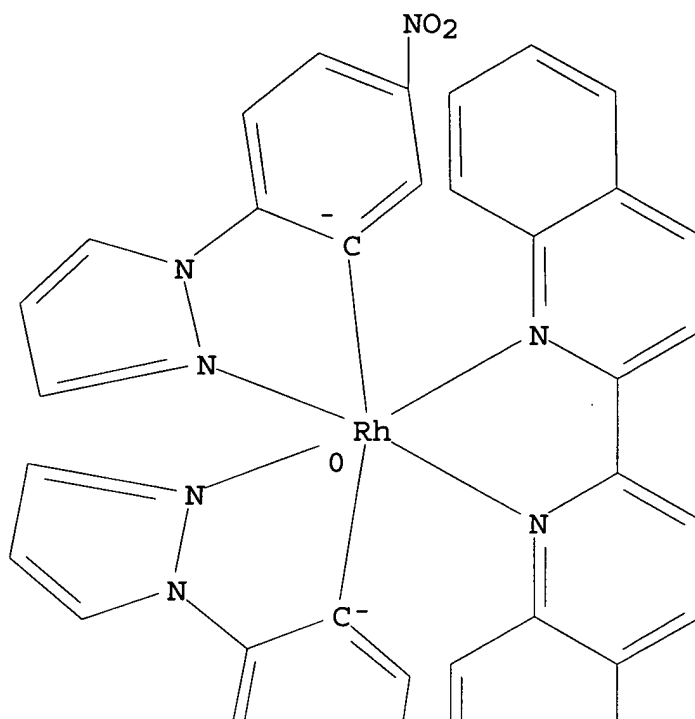
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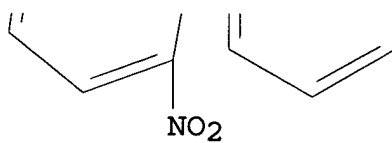
RN 130102-49-7 HCAPLUS  
 CN Rhodate(2-), (2,2'-biquinoline-N,N') [5-nitro-2-(1H-pyrazol-1-yl)phenyl]- (9CI) (CA INDEX NAME)



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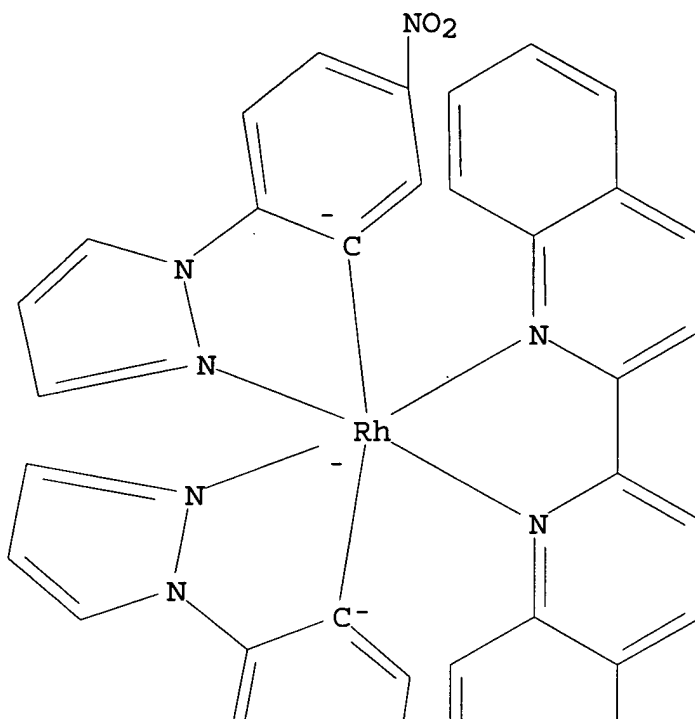


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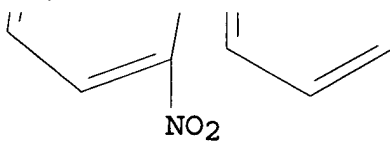


RN 130102-50-0 HCAPLUS  
 CN Rhodate(3-), (2,2'-biquinoline-N,N') [5-nitro-2-(1H-pyrazol-1-yl)phenyl]- (9CI) (CA INDEX NAME)

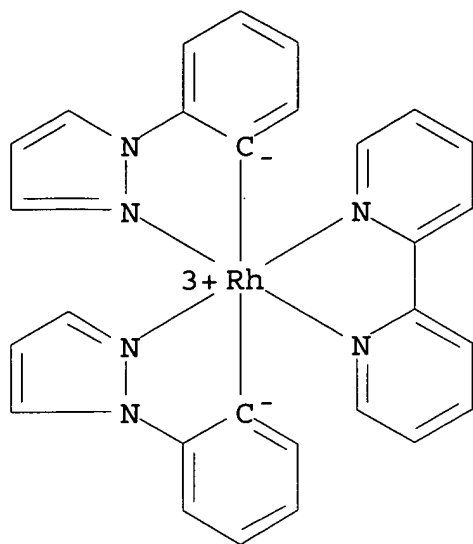
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PAGE 2-A

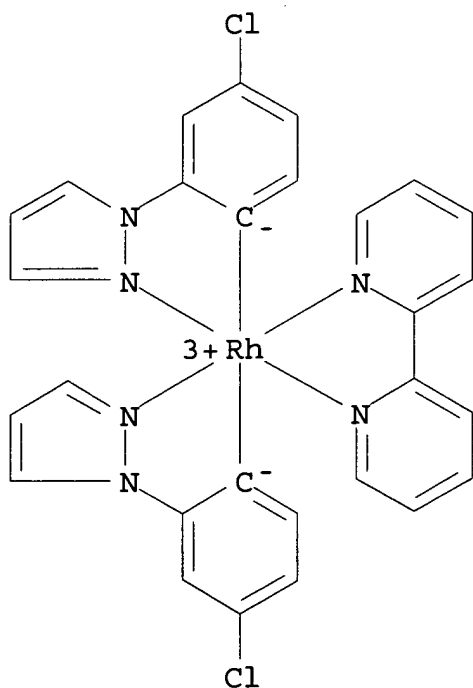


IT 130102-10-2 130102-11-3 130102-12-4  
 130102-13-5 130102-14-6  
 (redox. potential and optical absorption and  
 luminescence of)  
 RN 130102-10-2 HCAPLUS  
 CN Rhodium(1+),  
 (2,2'-bipyridine-N,N')bis[2-(1H-pyrazol-1-yl)phenyl]-  
 , (OC-6-13)- (9CI) (CA INDEX NAME)



RN 130102-11-3 HCAPLUS

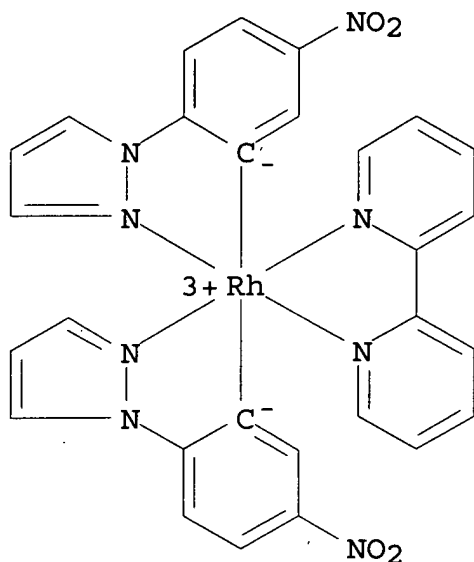
CN Rhodium(1+), (2,2'-bipyridine-N,N')bis[4-chloro-2-(1H-pyrazol-1-yl)phenyl]-, (OC-6-13)- (9CI) (CA INDEX NAME)



RN 130102-12-4 HCAPLUS

CN Rhodium(1+), (2,2'-bipyridine-N,N')bis[5-nitro-2-(1H-pyrazol-1-

yl)phenyl]-, (OC-6-13)- (9CI) (CA INDEX NAME)

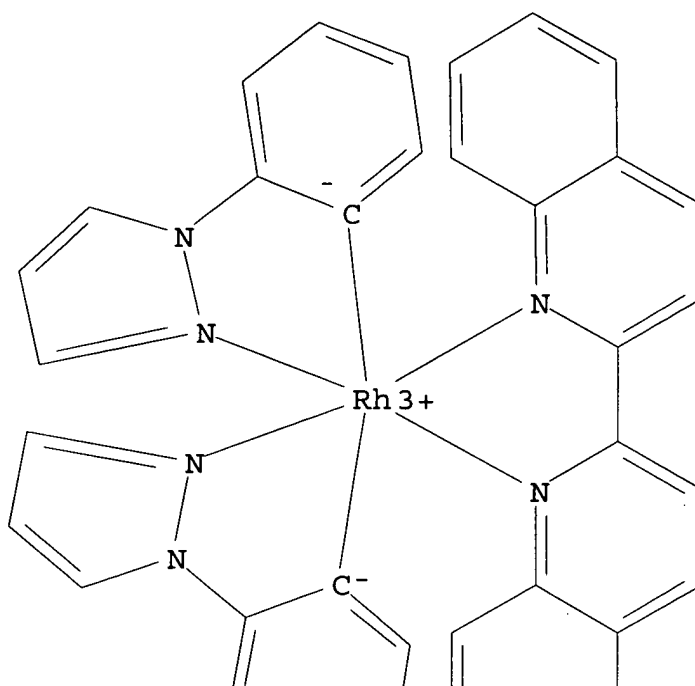


RN 130102-13-5 HCAPLUS

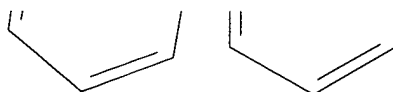
CN Rhodium(1+),

(2,2'-biquinoline-N,N')bis[2-(1H-pyrazol-1-yl)phenyl]-  
, (OC-6-13)- (9CI) (CA INDEX NAME)

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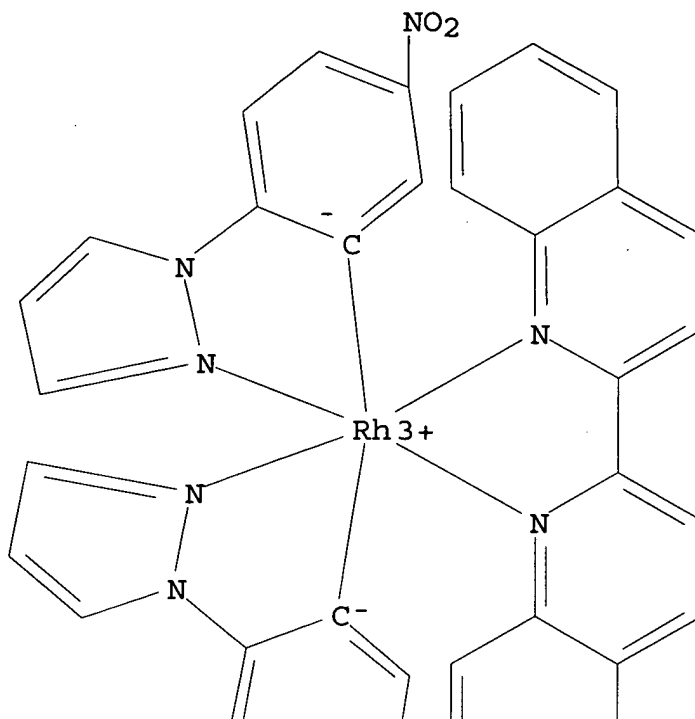


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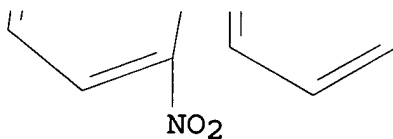


RN 130102-14-6 HCAPLUS  
CN Rhodium(1+), (2,2'-biquinoline-N,N')bis[5-nitro-2-(1H-pyrazol-1-yl)phenyl]-, (OC-6-13) - (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 72-2 (Electrochemistry)  
 Section cross-reference(s): 73  
 ST rhodium complex cyclometalated pyrazole deriv; elec potential  
 redn  
 oxidn complex; optical absorption **luminescence** complex  
 IT **Luminescence**  
 Oxidation, electrochemical  
 Reduction, electrochemical  
 Ultraviolet and visible spectra  
 (of cyclometalated rhodium complexes)

IT 130102-41-9 130102-42-0 130102-43-1  
130102-44-2 130102-45-3 130102-46-4  
130102-47-5 130102-48-6 130102-49-7  
130102-50-0  
(elec. potential of redox couple containing)  
IT 1126-00-7 3463-30-7 20755-72-0 57211-65-1 59219-37-3  
(optical absorption and **luminescence** of)  
IT 130102-10-2 130102-11-3 130102-12-4  
130102-13-5 130102-14-6  
(redox. potential and optical absorption and  
**luminescence** of)

L16 ANSWER 30 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1989:534440 HCAPLUS

DOCUMENT NUMBER: 111:134440

TITLE: Absorption spectra, **luminescence**  
properties, and electrochemical behavior of  
two new cyclometalated platinum(II) complexes  
AUTHOR(S): Sandrini, Diana; Maestri, Mauro; Ciano,  
Mauro;

Balzani, Vincenzo; Lueoend, Rainer;  
Deuschel-Cornioley, Christine; Chassot,  
Laurent; Von Zelewsky, Alex

CORPORATE SOURCE: Dip. Chim. "G. Ciamician", Univ. Bologna,  
Bologna, I-40126, Italy

SOURCE: Gazzetta Chimica Italiana (1988), 118(9),  
661-5

CODEN: GCITA9; ISSN: 0016-5603

DOCUMENT TYPE: Journal

LANGUAGE: English

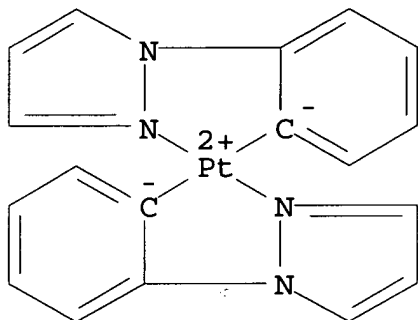
AB The absorption spectra, **luminescence** spectra,  
**luminescence** quantum yields, excited state lifetimes and  
electrochem. behavior of the cyclometalated Pt(phpz)<sub>2</sub> and  
Pt(phpz)(thpy) complexes, where phpz- and thpy- are the  
ortho-C-deprotonated forms of 1-phenylpyrazole and  
2-(2'-thienyl)pyridine, have been investigated. The results  
obtained have been compared with those concerning the free  
protonated ligands and the previously studied Pt(thpy)<sub>2</sub> complex.  
**Luminescence** originates from the lowest metal-to-ligand  
charge transfer (MLCT) excited state, which in the mixed ligand  
Pt(phpz)(thpy) complex involves the thpy- ligand which is easier  
to reduce. Pt(phpz)(thpy) exhibits a strong and long lived  
**luminescence** even in fluid solution at room temperature In the  
absorption spectra, MLCT and ligand-centered (LC) bands involving  
the phpz- or thpy- ligands have been assigned and correlations  
between spectroscopic and electrochem. data are discussed.

IT 109284-54-0 122658-63-3

(absorption spectrum, **luminescence**, and electrochem.  
redox reaction of)

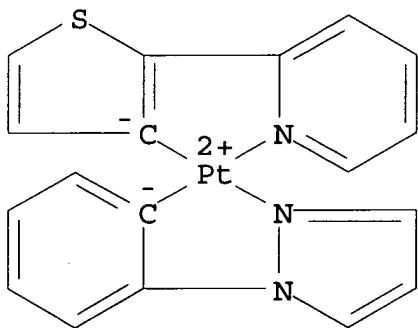
RN 109284-54-0 HCAPLUS

CN Platinum, bis[2-(1H-pyrazol-1-yl)phenyl]-, (SP-4-2)- (9CI) (CA  
INDEX NAME)



RN 122658-63-3 HCAPLUS

CN Platinum, [2-(1H-pyrazol-1-yl)phenyl][2-(2-pyridinyl)-3-thienyl-  
C3,N2]-, (SP-4-3)- (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)  
Section cross-reference(s): 22

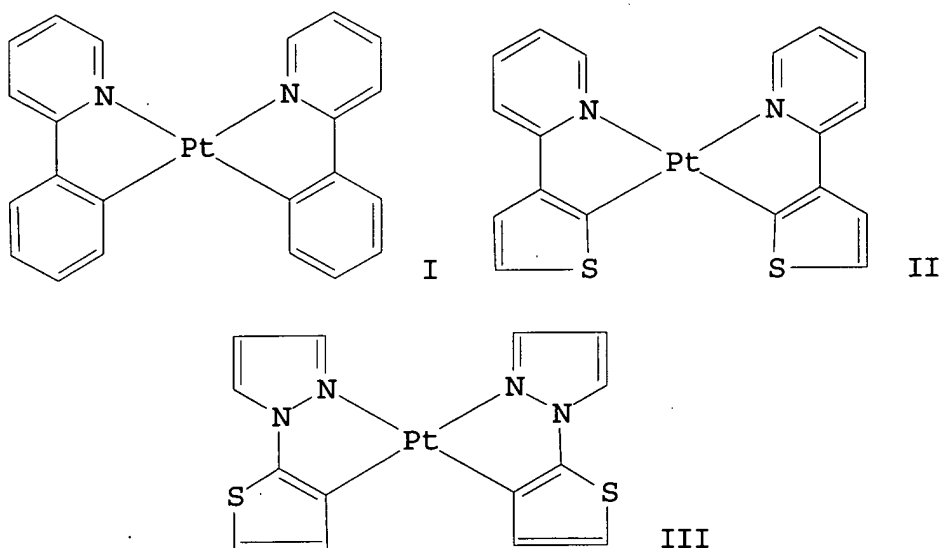
ST cyclometalated phenylpyrazoleplatinum UV electrochem  
**luminescence**; platinum cyclometalated phenylpyrazole  
electrochem spectra; thienylpyridine cyclometalated platinum  
electrochem spectra

IT 1126-00-7 3319-99-1 100012-12-2 109284-54-0  
122658-63-3

(absorption spectrum, **luminescence**, and electrochem.  
redox reaction of)



L16 ANSWER 31 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1987:496876 HCAPLUS  
DOCUMENT NUMBER: 107:96876  
TITLE: Cyclometalated complexes of platinum(II):  
homoleptic compounds with aromatic C,N  
ligands  
AUTHOR(S): Chassot, L.; Von Zelewsky, A.  
CORPORATE SOURCE: Inst. Inorg. Chem., Univ. Fribourg, Fribourg,  
CH-1700, Switz.  
SOURCE: Inorganic Chemistry (1987), 26(17), 2814-18  
CODEN: INOCAJ; ISSN: 0020-1669  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 107:96876  
GI



AB The synthesis of five new homoleptic bis(cyclometalated) Pt(II) complexes, e.g., cis-bis(2-phenylpyridinato)platinum (I), cis-bis[2-(2-thienyl)pyridinato]platinum (II), and cis-bis[1-(2-thienyl)pyrazolato]platinum (III), from trans-PtCl<sub>2</sub>(SEt<sub>2</sub>)<sub>2</sub> and the lithiated ligands at low temperature is described. All compds. are air-stable, soluble in many organic solvents, and photoreactive in solution under irradiation with visible light. The strong low-energy bands in the electronic spectra in the range from 400 to 450 nm are assigned to metal to

ligand charge-transfer (MLCT) transitions from a Pt(5d) orbital to an empty  $\pi^*$  orbital of the ligands. Most spectra show a weak absorption superimposed on the low-energy side of the strong MLCT band. This weak absorption is attributed to a singlet-triplet transition of the same type as the strong band. The complexes can be reduced electrochem. in reversible one-electron steps.

Oxidation

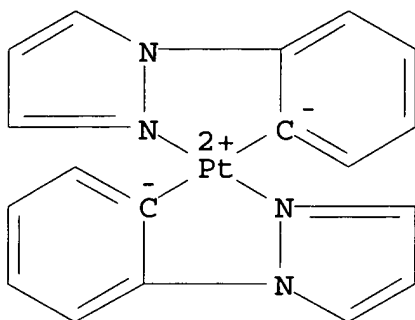
occurs also, but in a completely irreversible manner.

IT 109284-54-0P 109306-87-8P

(preparation, multinuclear NMR, UV, and cyclic voltammetry of)

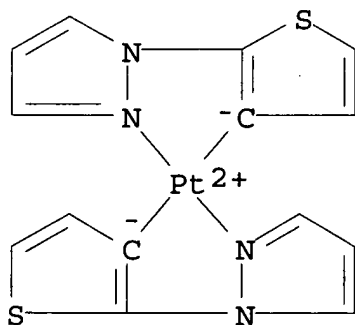
RN 109284-54-0 HCAPLUS

CN Platinum, bis[2-(1H-pyrazol-1-yl)phenyl]-, (SP-4-2)- (9CI) (CA INDEX NAME)



RN 109306-87-8 HCAPLUS

CN Platinum, bis[2-(1H-pyrazol-1-yl)-3-thienyl]-, (SP-4-2)- (9CI) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 72

IT 100012-12-2P **109284-54-0P** 109284-55-1P 109284-56-2P

**109306-87-8P**

(preparation, multinuclear NMR, UV, and cyclic voltammetry of)